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RAPID INTERPRETATION PRINTER-PROCESSOR

MAINTENANCE MANUAL

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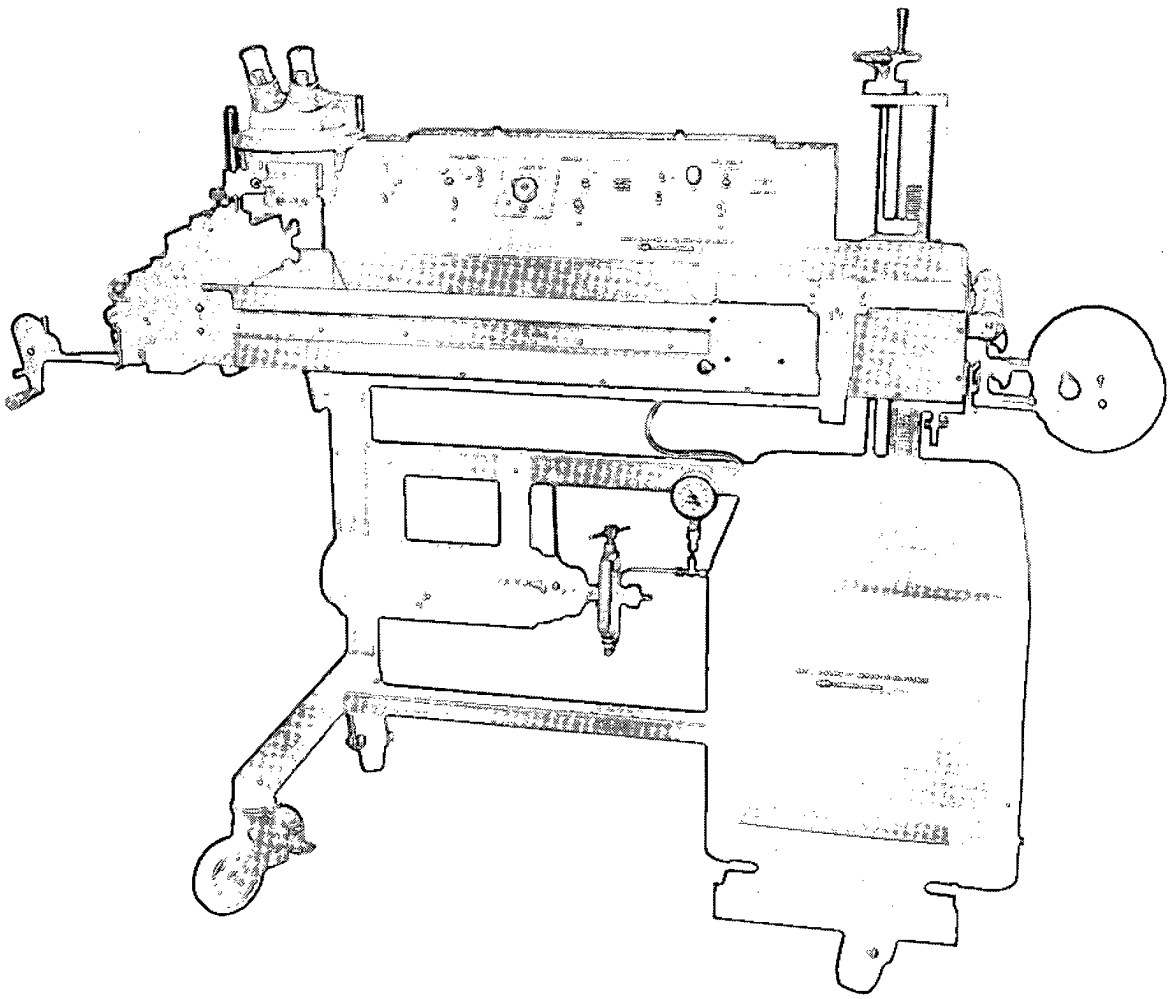

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SECTION 1

INTRODUCTION

1.1 GENERAL

This manual contains instructions and procedures for the maintenance of the [redacted] Rapid Interpretation Printer-Processor (RIPP). This STAT unit is a photo interpretation work station incorporating a variably illuminated light table, a contact Diazo printer, and a Diazo film processor that utilizes ammonia as the processing catalyst.

The second section of this manual details a Preventive Maintenance Program that should assure continued operation of the RIPP equipment. Section 3 details the RIPP electrical system. Maintenance and disassembly procedures of the RIPP's major components (Figure 1.1) are detailed in Section 4. Other sections include Preparation for Shipment, and a Parts List providing [redacted] STAT [redacted] part numbers for major components. STAT

1.2 HIGH VOLTAGE PRECAUTION

Both viewing and exposure lights in the RIPP operate at high voltages. Consequently, neither the Control Panel nor the housing for the lights should be opened unless the power cord is unplugged and extreme care is exercised.

1.3 AMMONIA SYSTEM PRECAUTION

The ammonia tanks utilized in the RIPP and a portion of the ammonia distribution line contain concentrated ammonia at approximately 120 psig. If allowed to escape uncontrolled into an average sized room, the room would rapidly fill with irritating ammonia fumes. Consequently, prior to disassembly of any portion of the ammonia system, shut off the ammonia tank with the wrench provided and bleed the ammonia line as detailed in Section 4.

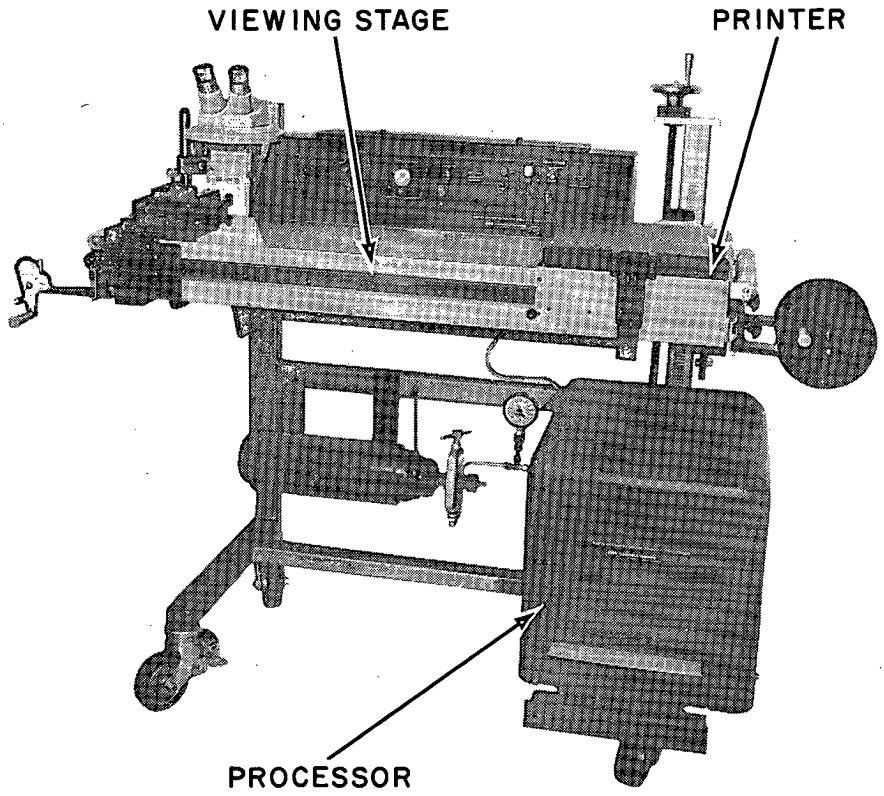

Figure 1.1 MAJOR COMPONENTS OF THE RAPID INTERPRETATION PRINTER-PROCESSOR

SECTION 2

PREVENTIVE MAINTENANCE

While the Rapid Interpretation Printer-Processor is a rugged and relatively simple piece of equipment, it should be given the care characteristically given to all precision opto-mechanical equipment. Such attention, together with the implementation of the following preventive maintenance procedures, should assure safe and continuous machine operation and the production of quality film copies.

2.1 DUST ACCUMULATION

Care should be exercised to prevent the accumulation of dust or foreign matter on the exposure platen, the entrance shute of the Processor and the Processor drawer. Glass surfaces should be cleaned periodically with a dry brush or a window cleaning solvent such as Windex applied with lens tissue. The entrance shute should be cleaned periodically with a vacuum cleaner equipped with a tapered nozzle.

2.2 1000 HOUR CHECK AND LUBRICATION

After approximately 1000 hours of processor operation, the Processor should be disassembled (in accordance with instructions, Section 4) to the degree necessary to obtain access to both drive chains and the processor motor. The following procedures should then be implemented:

A. Check Processor motor gearbox and lubricate gearbox and motor bearings with Molycote Type L lubricant.

B. During reassembly, drive chains should be lubricated with a low temperature silicone grease (Dow Corning 33 Grease or equivalent).

C. Chains should be reinstalled so that they are taut. This is accomplished by movement of the idler sprockets.

SECTION 3

ELECTRICAL SYSTEM

3.1 HIGH VOLTAGE PRECAUTION

Both viewing and exposure lights in the RIPP operate at high voltages. Consequently, neither the Control Panel nor the housing for the lights should be opened unless the power cord is unplugged and extreme care is exercised.

3.2 LAMPS AND LAMP LIFE

Location	Description	Anticipated Life
Light Table	Primary Light Source	10,000 hours
Printer	Exposure Lamp	2,000 Exposures
Printer	Preview Lamps	6-10,000 hours
Control Panel	Indicator Lamps	6-10,000 hours

3.3 FUSES

All fuses utilized in the RIPP are of the indicating type, i.e., they will illuminate at failure. All operating fuses are located on the Control Panel. Access to each fuse is gained by unscrewing the fuse cap from the front of the console. A rack of spare fuses may be found under the right hand end of the light table.

3.4 REPLACEMENT OF CONTROL PANEL INDICATOR LAMPS

To replace Control Panel indicator lamps, unscrew caps and twist out. Replace with General Electric NE 51/H bulbs.

3.5 ACCESS TO CONTROL PANEL INTERIOR

To gain access to the circuitry located behind the control panel, pad light table with thick foam rubber, several layers of heavy cloth, or thick packing material. Remove screws on perimeter of control panel, lift forward and out and place face down on top of the padded table (Figure 3.1).

3.6 METER RESET

Both the exposure counter and the Processor elapsed time meter may be reset by hand. Access to the reset controls is gained from the back of the Control Panel.

3.7 ELECTRICAL SCHEMATIC

The RIPP Electrical Schematic is illustrated in Figure 3.2.

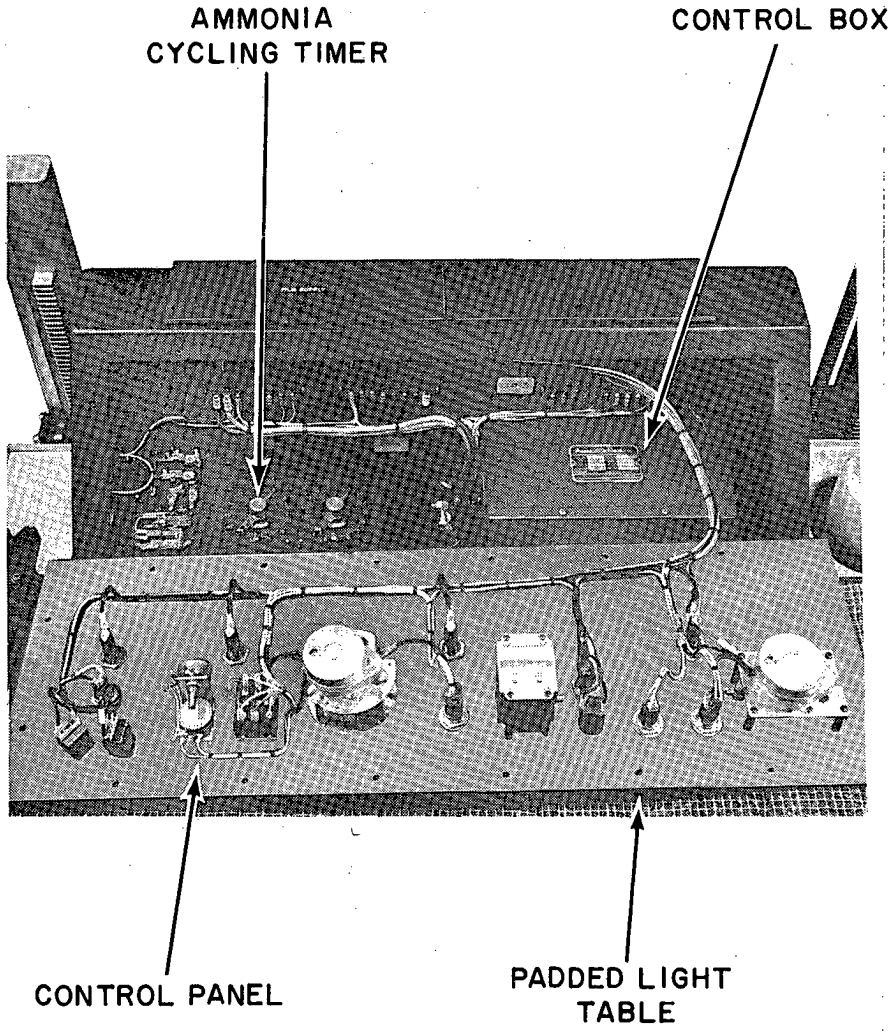

Figure 3.1 CONTROL PANEL INTERIOR

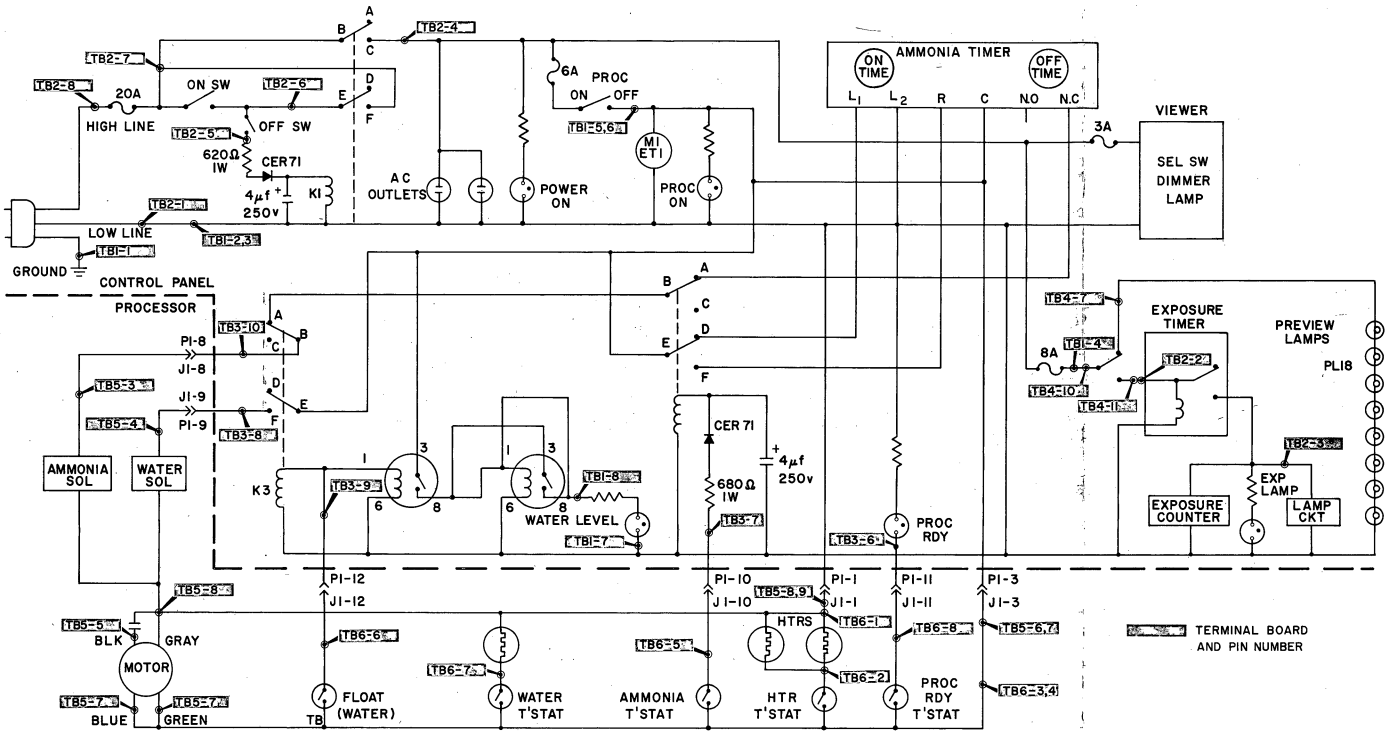

Figure 3.2 ELECTRICAL SCHEMATIC

SECTION 4

DISASSEMBLY AND MAINTENANCE PROCEDURES

4.1 LIGHT TABLE

4.1.1 GENERAL

The light table of the RIPP is a modified Richard's GFL 940 MCE Light Table and its construction is essentially the same as the unmodified version. If other than the lamp or glass viewing surface replacement is required, the Richard's Maintenance Manual should be consulted.

4.1.2 DISASSEMBLY

Slide stereoscope mount to extreme left position. Remove screw from film roller at left end of table and remove roller. Remove two screws holding film roller bracket and remove bracket. Glass viewing surface may now be slid to the left out of position. To remove lamp, disconnect electrical leads 2 and 3 from TB #4. Remove 4 screws in corners of lamp plate and lift out of position.

4.2 PRINTER

4.2.1 PRINTING PRESSURE ADJUSTMENT

The production of prints with non-uniform resolution throughout the format may be the result of non-uniform pressure being applied at the Printer platen. This may be tested by running resolution tests in the four quadrants of the platen. If pressure adjustment appears necessary, two mechanisms are available. These adjustments, which should be made with the pressure platen unlocked, permit changes in pressure to be made at both the

front and rear of the printer. The first adjustment is made by screwing or unscrewing the latch catch. This varies the pressure primarily in the front half of the pressure platen.

The second adjustment is provided by two hex socket cap screws at the back of the palten cover. These screws may be loosened to allow raising or lowering the cover on its hinges which, in turn, varies the pressure primarily on the rear half of the pressure platen.

These adjustments permit the application of equal pressure throughout the format area. Correct pressure will result in uniform resolution measurements throughout the format.

4.2.2 PRINTER DISASSEMBLY

To disassemble printer to replace glass, exposure lamp or preview lamps, remove film roller and film roller bracket from right end of table. Remove the 10 hex head screws holding frame to table and lift out frame and glass. The glass printing surface (Vicor glass) may now be removed by disassembling the frame.

To replace exposure lamp, remove the white mounting clamps and electrical leads #5, 6,7,8, and 9 from TB #4. Lamp may now be lifted out of position.

Access to the Preview Lamps is gained once the glass printing surface and exposure lamp are removed. The Preview Lamps are T3 1/2/18V, #1445 lamps wired in series.

4.3 PROCESSOR

The Processor consists of three subsystems and their related electrical components. They are the water supply, ammonia supply and the film

transport subsystems respectively.

4.3.1 WATER SUPPLY SUBSYSTEM

The water supply subsystem is schematically illustrated in Figure 4.1. Externally visible components of the subsystem are photographically illustrated in Figures 4.2, 4.3, 4.4, and 4.5 and consist of the following:

A. Main Water Reservoir (Figure 4.2) - Plastic water bottle, refillable from top.

B. Water ON-OFF Solenoid Valve (Figure 4.5) - Feeds water supply from main reservoir to secondary reservoir located within processor. Solenoid is actuated by float valve located in secondary reservoir.

C. Secondary Water Reservoir (Figure 4.4) - Located within processor "tunnel". Contains float valve and heating element.

D. Plastic Water Tubing and Unions (Figure 4.3) - Feeds water from primary reservoir to solenoid and hence to secondary reservoir.

4.3.1.1 Activation of Water Supply Subsystem. An automatic ammonia shut down will occur should water level in the Processor fall below a preset level. Consequently, the Processor will not function properly without first activating the water supply subsystem. To activate water supply subsystem, remove cap of primary reservoir and fill with water until water level is approximately level with the top of the table. It is recommended that distilled water be used in the system.

4.3.1.2 Draining of Water Supply Subsystem. Should shipment or major movement of the RIPP table be contemplated, the water supply subsystem must be drained. Both the primary and the secondary reservoirs must be emptied. Total capacity is approximately 1 1/2 quarts.

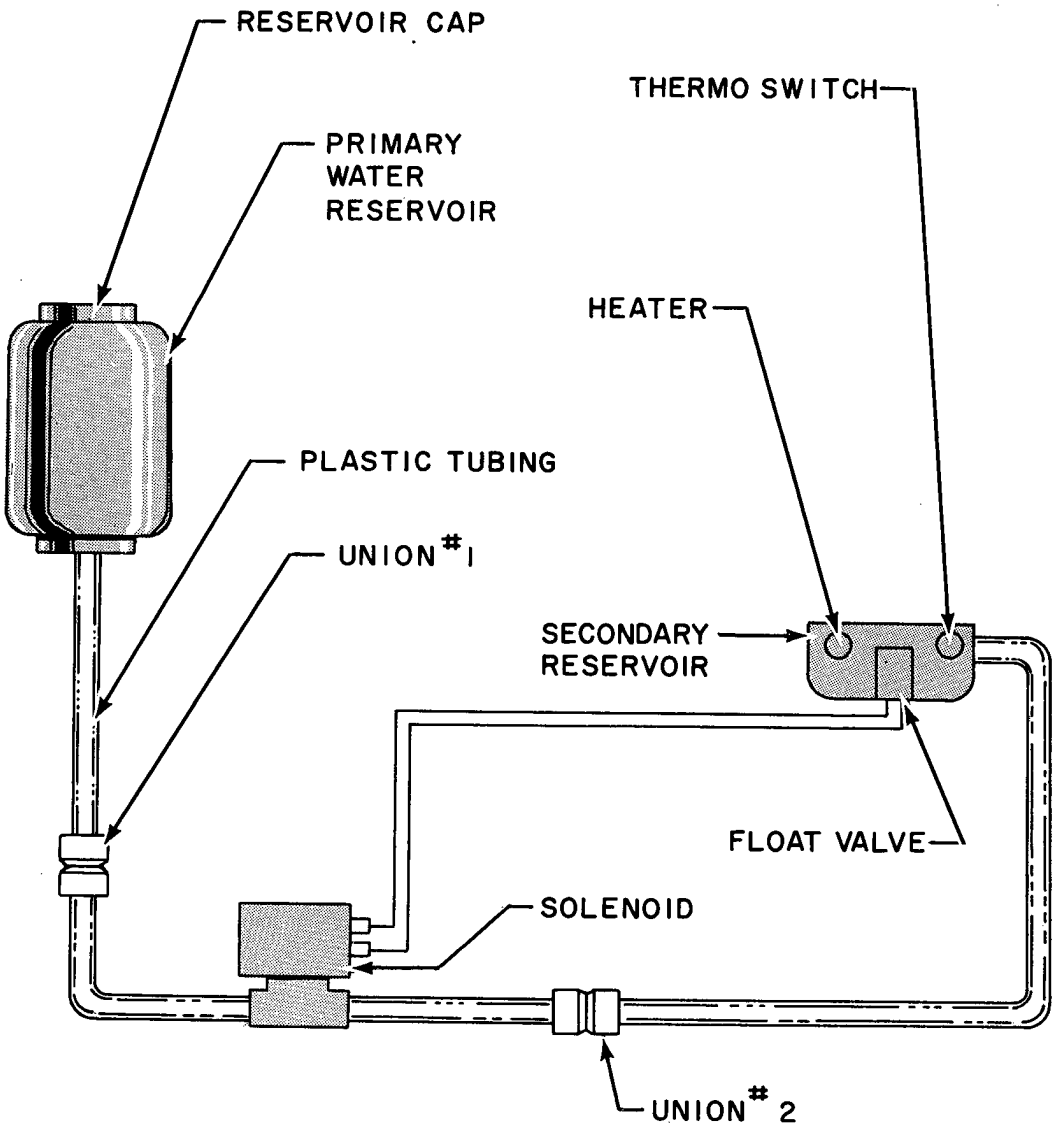

Figure 4.1 SCHEMATIC of WATER SUPPLY SUBSYSTEM

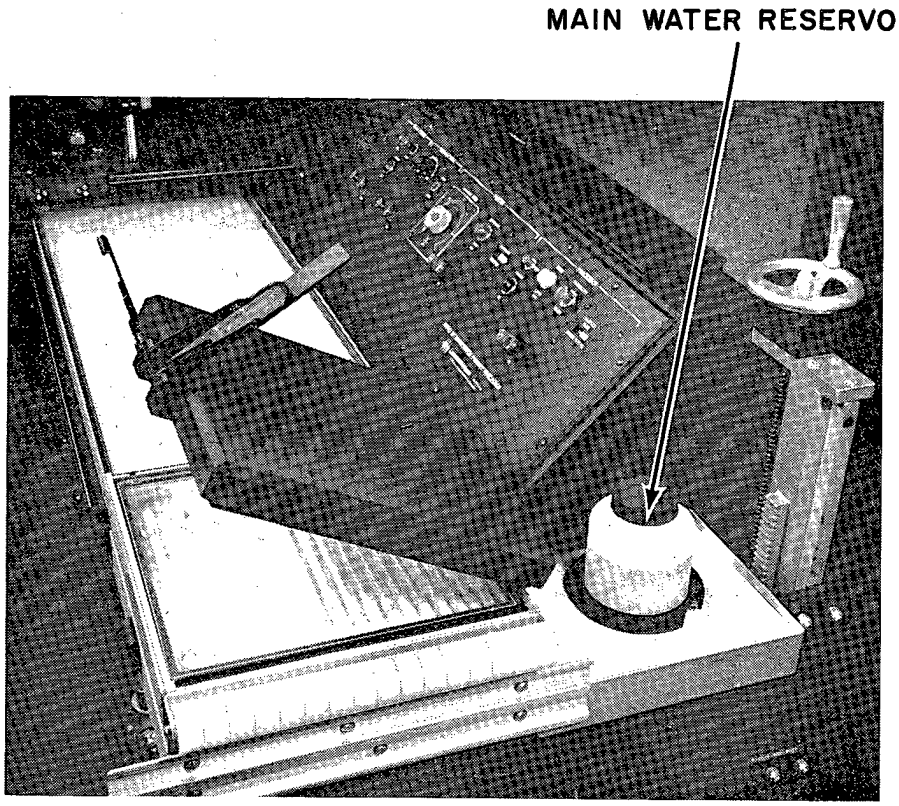

Figure 4.2 MAIN WATER RESERVOIR

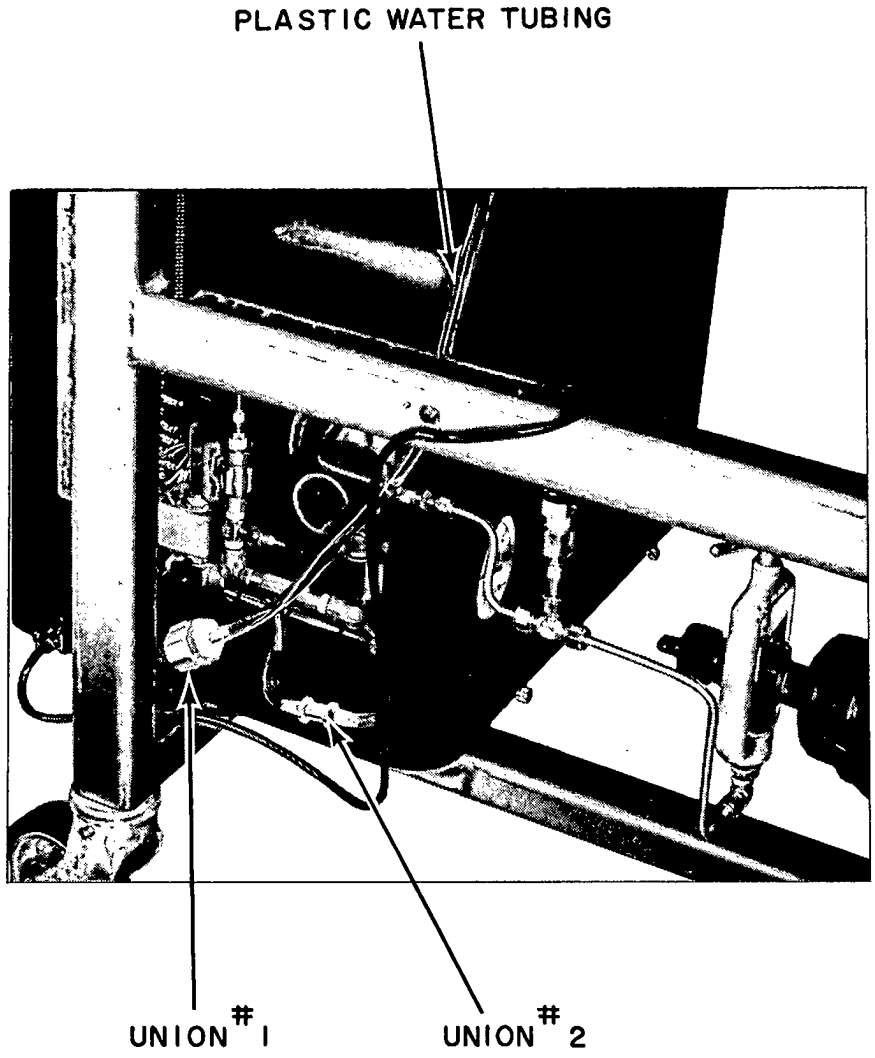

Figure 4.3 REAR VIEW OF PROCESSOR SHOWING LOCATION OF SOME WATER SUPPLY SUBSYSTEM COMPONENTS

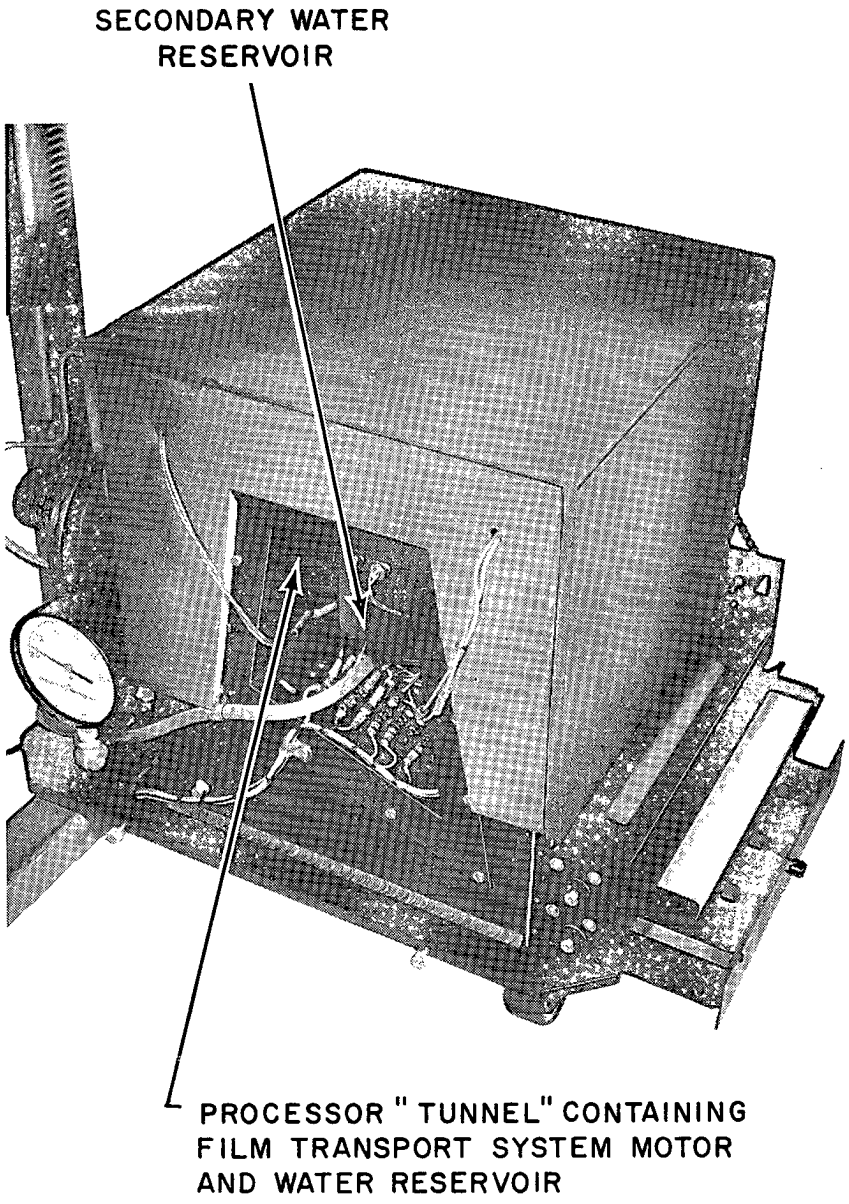

Figure 4.4 SIDE VIEW OF PROCESSOR, SHROUD REMOVED

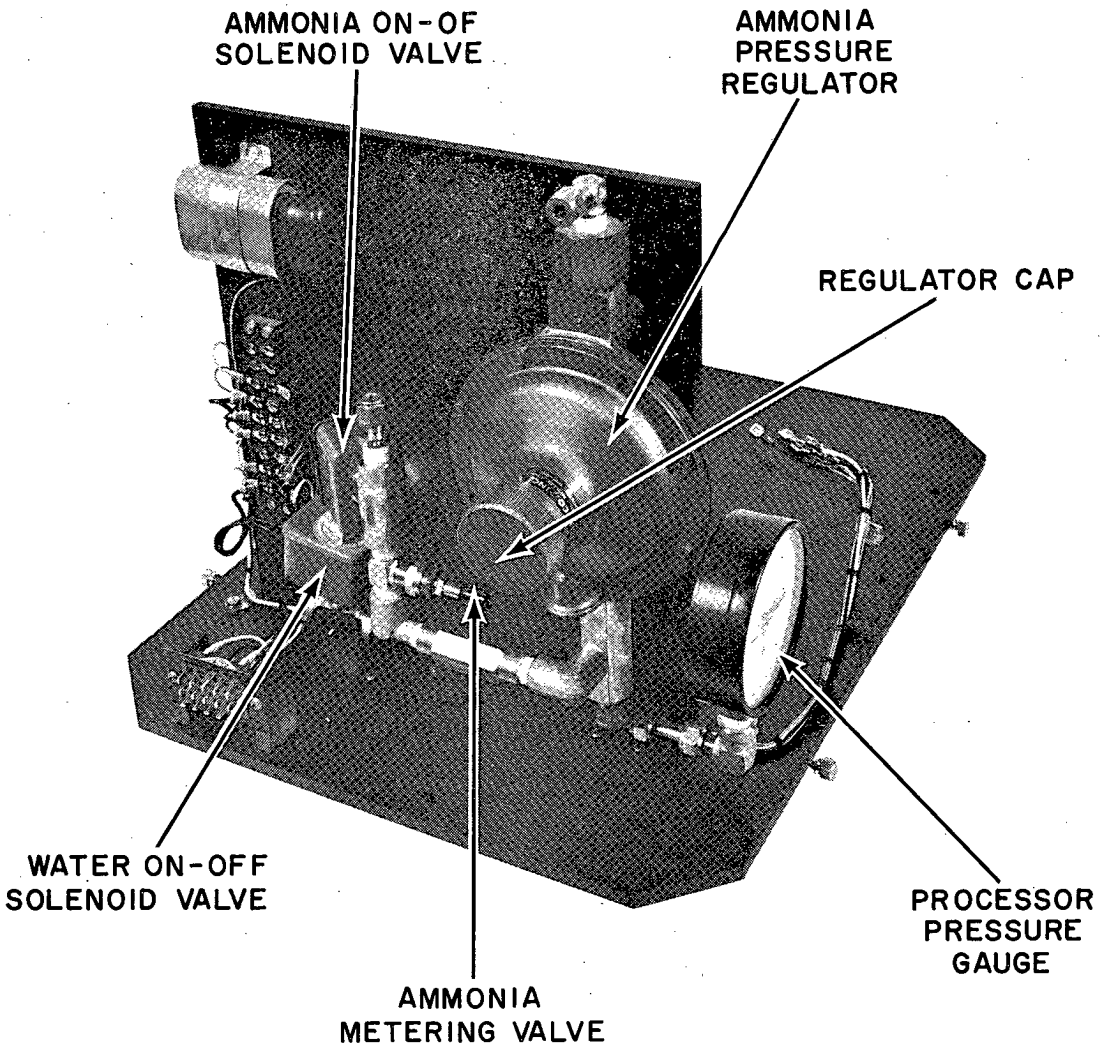

Figure 4.5 PROCESSOR SHELF (PROCESSOR AND COVER REMOVED) SHOWING AMMONIA AND WATER DISTRIBUTION SUBSYSTEM

A. To drain Primary Reservoir, disconnect union #1 (Figure 4.3) and drain into waterproof container.

B. To drain Secondary Reservoir, disconnect union #2 (Figure 4.3) and drain into waterproof container.

4.3.1.3 Failure of Water Level Low Indicator. Should the water-level-low indicating lamp fail to flash although water level in primary reservoir is evidently empty, the flasher and the relay within the water system circuitry should be checked for proper functioning prior to any further disassembly.

not a fail safe system.

4.3.2 AMMONIA SUPPLY SUBSYSTEM

The ammonia supply subsystem is schematically illustrated in Figure 4.6. The components are photographically illustrated in Figures 4.7 and 4.5 and consist of the following:

A. Ammonia Tank - Standard reusable tank.

B. Ammonia Shut-Off Valve - Standard valve mounted on ammonia tanks. (A valve wrench is attached to the assembly.)

C. Ammonia Tank Pressure Gage - Indicates tank pressure. This reading should be approximately 120 psig with a full tank depending on ambient temperature.

D. Ammonia Presssure Regulator - Reduces ammonia pressure to a steady 1 - 1 1/2 psig.

E. Processor Pressure Gage - Indicates ammonia pressure supplied by the pressure regulator, above. This reading should be between 1 and 1 1/2 psig.

F. Ammonia Metering Valve - Rate of flow regulator.

G. Ammonia ON-OFF Solenoid Valve - Automatically turns ammonia ON or OFF depending on needs of the Processor.

During Processor operation, ammonia is metered from the tank through the pressure regulator at a steady 1 - 1 1/2 psig, through a metering valve, and into the processing chamber. Ammonia flows only as required and is regulated by a solenoid valve actuated by a cycling timer located behind the control panel.

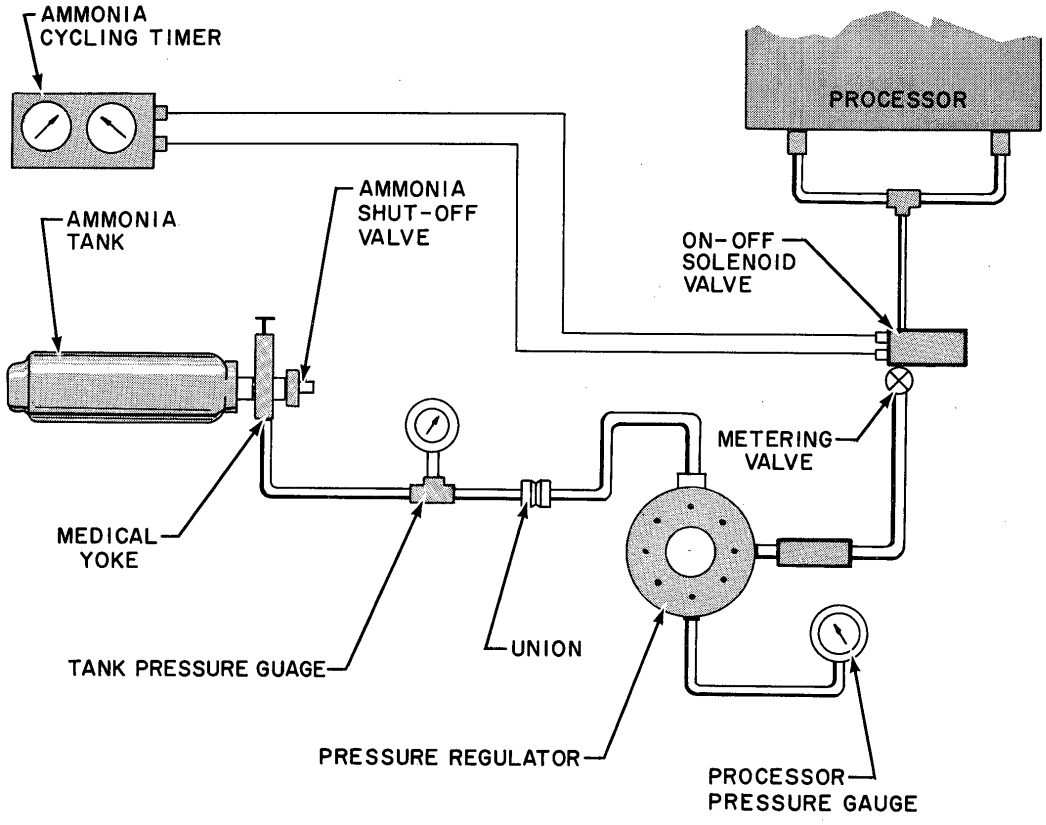

Figure 4.6 SCHEMATIC of AMMONIA SUPPLY SUBSYSTEM

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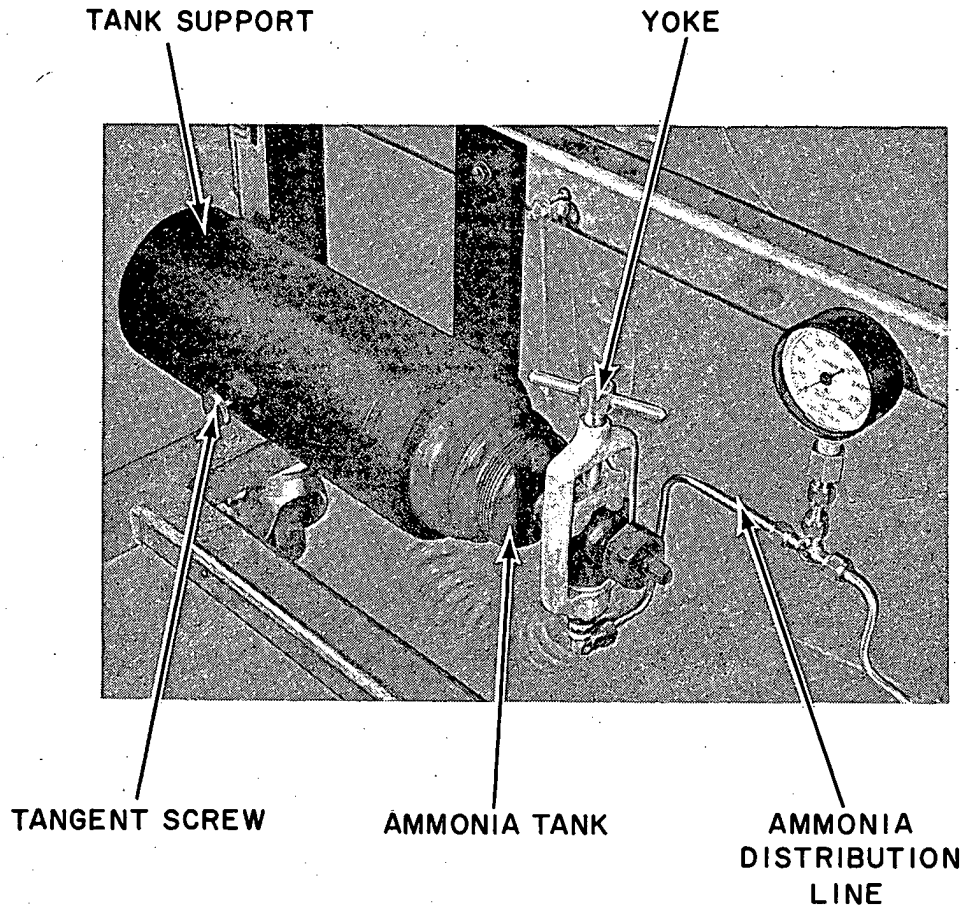

Figure 4.7 AMMONIA TANK AND RELATED SUPPORT ASSEMBLY

4.3.2.1 Initial Activation of Ammonia Supply Subsystems. To activate the ammonia supply subsystem requires the following sequence of events:

1. Slide ammonia tank through tank support and into Yoke with tank exit port facing downward. Lower part of Yoke should have rubber gasket seated in position. Tighten Yoke snugly by hand making certain that proper fit is obtained. With Yoke tightened, tighten tangent screw on tank support to secure assembly.

2. Open tank shut off valve with wrench attached to table. With a full tank, Tank Pressure Gauge should read approximately 120 psig.

3. Turn Main Power and Processor ON after determining that power cord is plugged into 110V/60 cycle, 20 amp power receptacle.

4. Check that Processor Pressure Gauge reads 1 to 1 1/2 psig. If not, unscrew green cap at rear of Processor to gain access to Processor Pressure Regulator and adjust to proper pressure with hex wrench. Any adjustments should be made cautiously. Clockwise valve rotation will increase pressure while counterclockwise rotation will decrease pressure. Replace regulator cap. Subsequent tank replacements should require little or no adjustment of this regulator.

3# per Plunkett

4.3.2.2 Ammonia Tank Replacement. The depletion of the ammonia supply will be evidenced by a sharp and rapid decline of ammonia tank pressure from its normal pressure of approximately 120 psig. To remove depleted tank, close tank valve with wrench provided, unscrew Yoke Lock and tank support tangent screw, and slide tank through tank support into yoke with tank exit port facing downward. Lower part of Yoke should have rubber gasket seated in position. Tighten yoke snugly by hand making certain that proper fit is obtained. With yoke tightened, tighten tangent screw on tank support to secure assembly. Open tank shut-off valve with wrench provided. With a full tank, Tank Pressure Gage should read approximately 120 psig. Turn Processor ON, and check that Processor Pressure Gauge reads 1 - 1 1/2 psig. Processing may now continue. If controls

are properly adjusted, a full tank should last approximately 600 processing hours.

4.3.2.3 Bleeding of Ammonia Line. Should disassembly of ammonia supply system be required, ammonia line must be bled. This is necessary since part of the ammonia distribution line contains ammonia at approximately 120 psig. If allowed to escape uncontrolled into an average sized room, the room will rapidly fill with irritating ammonia fumes. To bleed the ammonia line requires the following sequence of events:

1. Remove power cord from wall outlet.
2. Shut off ammonia tank with wrench provided.
3. Disconnect ammonia line above ammonia ON-OFF solenoid and attach 2-3 feet of 3/8" (I.D.) plastic tubing.
4. Place open end of plastic tubing into water pail containing 2-3 gallons of water. (A closed line should now run between the ammonia solenoid and the water.)
5. Energizing the ammonia solenoid by applying 110V AC to terminals 3 and 8 (TB #5 adjacent to solenoid). Allow ammonia to bubble into the water until tank pressure gauge reads zero.
6. Discard ammoniated water, remove rubber tubing and reconnect ammonia line.

4.3.2.4 Ammonia Cycling Timer. The opening and closing of the ammonia solenoid is controlled by a cycling timer located within the control panel. This timer has been preset at the factory to provide the necessary amount of ammonia to the Processor in the processing of the recommended Diazo printing material and consequently, should not need adjustment under normal operating conditions.

Future advancements in techniques or diazo materials, however, may necessitate the changing of the ON - OFF cycling to a new combination. Con-

sequently, the timer has been positioned so that it is accessible without removing the control panel.

The timer is held in place by 6 screws accessible from under the control box. To remove timer, hold in place with one hand and remove screws with the other. With all screws removed, lower timer onto tank support or to low bench or stool placed under the table. If only tank support is available, timer may be taped in place.

4.3.3 FILM TRANSPORT SUBSYSTEM

The film path through the Processor and other internal components are illustrated in Figure 4.8. The film transport and guide belts, and the film transport chain are photographically illustrated in Figure 4.9. The drive chain and motor gear box are illustrated in Figure 4.10. The motor is mounted within the Processor "tunnel" (Figure 4.4).

4.3.3.1 Gear Box and Chain Lubrication. Lubrication of the motor gear box and the two chains should be accomplished after each 1000 hours of Processor operation in accordance with Section 2 of this manual, "Preventive Maintenance".

4.3.3.2 Processor Chain Tightening. To tighten (or loosen) outer drive chain, adjust the upper chain sprocket of the three sprockets located at the forward or film shute face of the Processor (Figure 4.10). To tighten (or loosen) the inner film transport chain, adjust the idler sprocket indicated in Figure 4.9.

4.3.4 PROCESSOR DISASSEMBLY

CAUTION: UNPLUG UNIT PRIOR TO DISASSEMBLY.

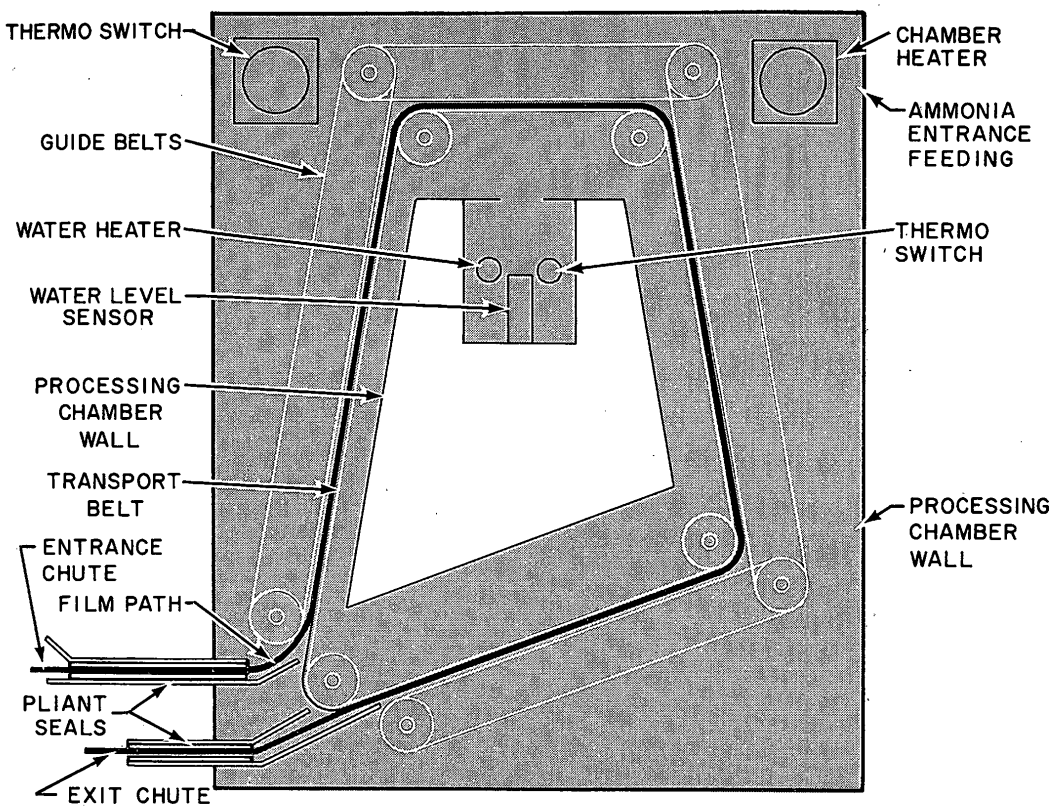

Figure 4.8 FILM PATH

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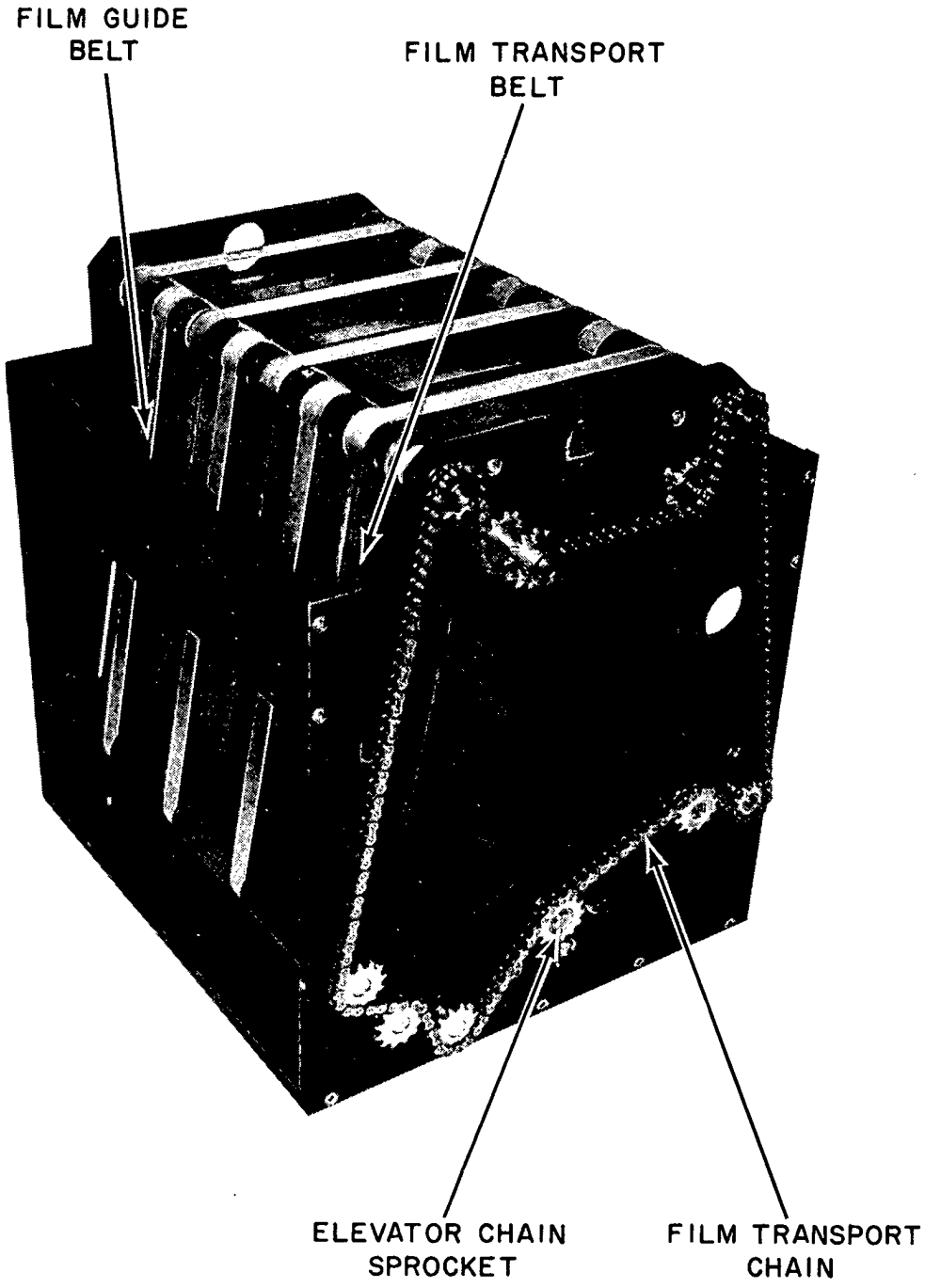

Figure 4.9 FILM TRANSPORT COMPONENTS

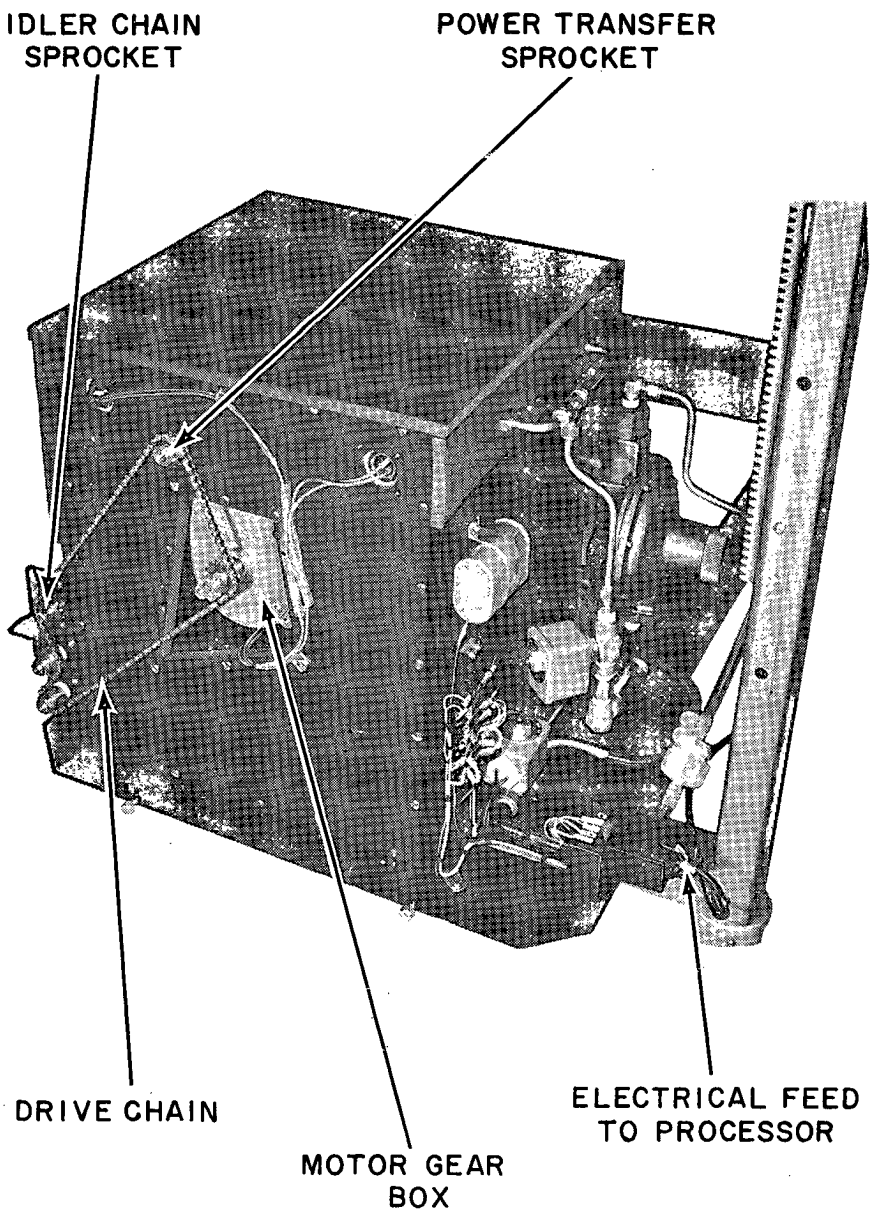

Figure 4.10 RIGHT END VIEW OF PROCESSOR, SHROUD REMOVED

4.3.4.1 Shroud Removal. To remove shroud, elevate table to full height, unscrew the two thumbscrews located each side of the Processor and lift shroud off vertically.

4.3.4.2 Processor Separation. If it is desirable to separate the Processor from the table to facilitate remote processing or testing, proceed as follows:

1. Shut ammonia tank off and bleed ammonia supply system.
2. Drain water supply system.
3. Disconnect ammonia supply system immediately to the right of tank pressure gauge at the union.
4. Disconnect primary water reservoir at union #1 (Figure 4.3).
5. Unplug electrical feed at rear of Processor (Figure 4.10).
6. Remove 3 bolts from under the Processor that fasten Processor to table.
7. Slide Processor forward and off.
8. Re-establish water supply system.
9. Re-establish ammonia supply system. CAUTION: Any additions to the system (tubing, connectors, or joints) must be capable of withstanding up to 150 psig pressure.
10. Re-establish electrical connection.

4.3.4.3 Removal of Processing Chamber and Film Transport Assembly. To remove the film transport and processing chamber assembly from the Processor shelf, requires the following sequence of events:

1. Shut off ammonia tank.
2. Remove Processor shroud.
3. Disconnect electrical wires (input side) from TB #6.
4. Drain water supply subsystem and disconnect at union 2 (Figure 4.3).

5. Back off the two ammonia line connectors immediately behind Processor.

6. Remove 6 screws from underneath Processor shelf and slide assembly forward and off.

4.3.4.4 Removal of Film Shute. To remove film shute assembly, unloosen idler chain sprocket (Figure 4.10) and remove drive chain. Remove 16 screws from front of shute and pull shute forward and off.

4.3.4.5 Removal of Film Transport Assembly. To separate the film transport assembly from the balance of the Processor, requires the following sequence of events:

1. Remove drive chain and film shute.

2. Support shaft of power transfer sprocket (Figure 4.10) from underneath and remove pin with 3/32" drift punch.

3. Slide power transfer sprocket from shaft.

4. Disconnect wiring at slip joint spade lugs and cable clamps on right side of assembly.

5. Remove screws (29) from plate at right side of assembly and remove plate.

6. Remove 4 screws from underneath the assembly. (Two 1/4-20 cup screws secure the front and two 1/4-20 button-head screws secure the rear. These must be assembled in the same order to obtain the required movement of the film drawer.)

7. Slide film transport assembly off "tunnel".

4.3.4.6 Disassembly of "Tunnel". To gain access to film drive motor and secondary water reservoir, disconnect necessary cable clamps and wiring from terminal board TB #6 within "tunnel" at left end, remove center core screws from right end, and center core screws from left end. Slide core out.

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SECTION 5

PREPARATION FOR SHIPMENT

The following steps should be performed prior to shipment of the Rapid Interpretation Printer-Processor.

a. Lock Microscope Slide in both X and Y by tightening thumbscrews.

b. Remove film spool support brackets.

c. Drain water from Primary and Secondary Reservoirs.

d. Close ammonia tank Shut-OFF valve and metering valve. Remove ammonia tank by loosening Yoke Lock. Rubber seal between tank and Yoke should be replaced when tank is reinstalled. Ammonia tank should be transported separately from the unit.

e. Lower table until it rests on stops.

f. Tape Printer Platen in the down position using packing tape or masking tape. Catch should be locked during shipment.

g. Tape Power Cord to frame of elevating mechanism.

h. Place Rapid Interpretation Printer-Processor in Light Table shipping crate.

i. Pack Film Spool Support Brackets in separate cardboard box and secure it in Light Table shipping crate.

j. Ammonia Tank should not be included in the crate.

SECTION 6

PARTS LIST

6.1 CONTROL PANEL

Part	Part No.
Front Panel	543707
Chassis, Control	543708
Bracket, Relay	543743
Bracket, Transformer	543732
Timer, Recycling	543777
Switch, Main	543778
Switch, Viewing Table	543779
Switch, Processor	543780
Connector	543781
Indicator, Elapsed Time	543785
Timer, Exposure	543786
Recepticle, Service	543793
Counter, Exposure	543797
Switch, Dimmer Control	544504

6.2 LIGHT TABLE

Pressure Platen Assembly	543711
Cover	543712
Pad, Cover Assembly	543713
Bracket, Lower Hinge	543714
Stop, Cover	543715
Bracket, Upper Hinge	543716

Part	Part No.
Shaft Hinge	543717
Bracket, Switch	543718
Stop, Switch	543719
Clamp, Glass	543720
Support, Latch	543721
Holder, Glass	543722
Spreader	543723
Glass, Platen	543724
Outline P.L.	543725
Outline B.P.	543726
Spacer	543727
Spacer, Light Table	543728
Bracket, Lower Hinge	543714
Latch, Extender	543729
Stop Button Latch	543730
Plate, Stop	543735
Cover, Ter. Strip	543736
Decal	543737
Stop Button Interlock	543731
Angle, Shelf Light Table	543733
Clamp, Water Bottle	543774
Cover, Terminal Strip	543736
Spacer	543740
Platen Latch Assembly	543787

6.3 PROCESSOR

Part	Part No.
Film Transport Assembly	543776
Frame, Processor	543700
Roller, Belt	543751
Adapter, Bearing	543701
Adapter, Bearing	543706
Roller, Drive	543709
Roller, Slip	543750
Washer, Thrust	543702
Chamber, Processor	543705
Adapter, Thermoswitch	543746
Adapter, Heater	543747
Radiator, Heater	543745
Heater, Chamber	543799
Heater, Water	544501
Reservoir, Processor	543734
Switch, Chamber Heat	544502
Switch, Water Heat	544503
Switch, Level	543784
Motor, Drive	788
Chain, Drive	794
Coupler, Chain	796
Seal, Drive Shaft	795
Switch Ready Process	544504
Idler Assembly Roller, Film Drive	543752

Part	Part No.
Chute Assembly	544500
Chute, Upper	543753
Mount, Idler	543766
Roller, Chute	543775
Adapter, Bearing	543765
Chute, Lower	543754
Strip, Filler	543771
Frame, Chute	543755
Bar, Seal	543769
Spreader, Film Feed	543763
Support, Bearing	543764
Pin, Idler	543767
Collar	543739
Clutch, Film Drive	543798
Runner, Film Tray	543770
Tray, Film	543772
Mounting Plate, Regulator	543759
Base Plate	543757
Holder, Bottle	543758
Block Solenoid Mtg.	543762
Mounting Block	543761
Mount, Connector	543760
Shroud	543773

6.4 AMMONIA SYSTEM

Part	Part No.
Anhydrous Ammonia Bottle	543783
Gasket, Yoke	543782
Regulator Assembly	543789
Solenoid Ammonia Control	543791
Solenoid Water Control	543790
Gauge 0-300 PSI	543792

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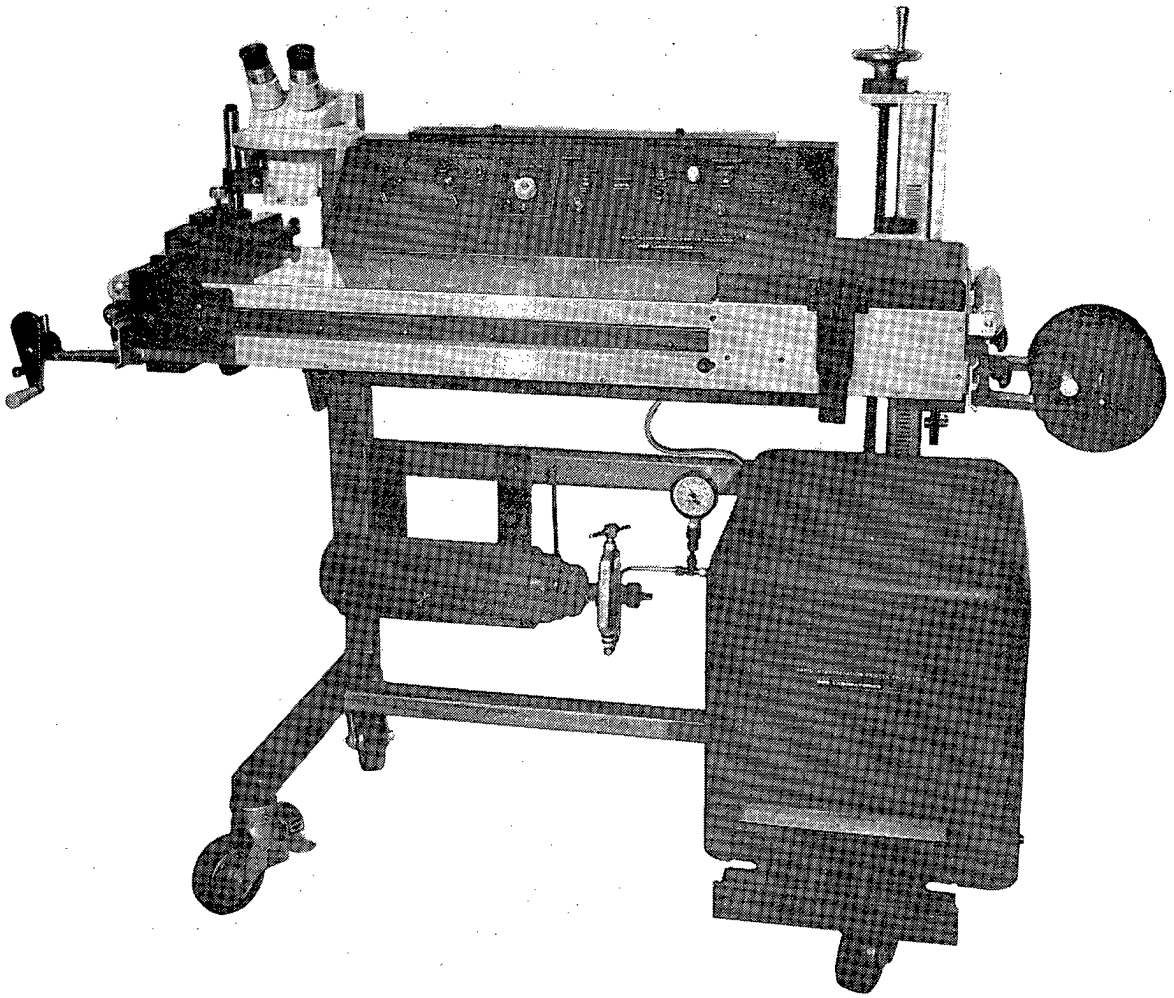

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SECTION 1

INTRODUCTION

1.1 GENERAL

This manual contains instructions and procedures for the maintenance of the [redacted] Rapid Interpretation Printer-Processor (RIPP). This unit is a photo interpretation work station incorporating a variably illuminated light table, a contact Diazo printer, and a Diazo film processor that utilizes ammonia as the processing catalyst.

The second section of this manual details a Preventive Maintenance Program that should assure continued operation of the RIPP equipment. Section 3 details the RIPP electrical system. Maintenance and disassembly procedures of the RIPP's major components (Figure 1.1) are detailed in Section 4. Other sections include Preparation for Shipment, and a Parts List providing [redacted] part numbers for major components.

1.2 HIGH VOLTAGE PRECAUTION

Both viewing and exposure lights in the RIPP operate at high voltages. Consequently, neither the Control Panel nor the housing for the lights should be opened unless the power cord is unplugged and extreme care is exercised.

1.3 AMMONIA SYSTEM PRECAUTION

The ammonia tanks utilized in the RIPP and a portion of the ammonia distribution line contain concentrated ammonia at approximately 120 psig. If allowed to escape uncontrolled into an average sized room, the room would rapidly fill with irritating ammonia fumes. Consequently, prior to disassembly of any portion of the ammonia system, shut off the ammonia tank with the wrench provided and bleed the ammonia line as detailed in Section 4.

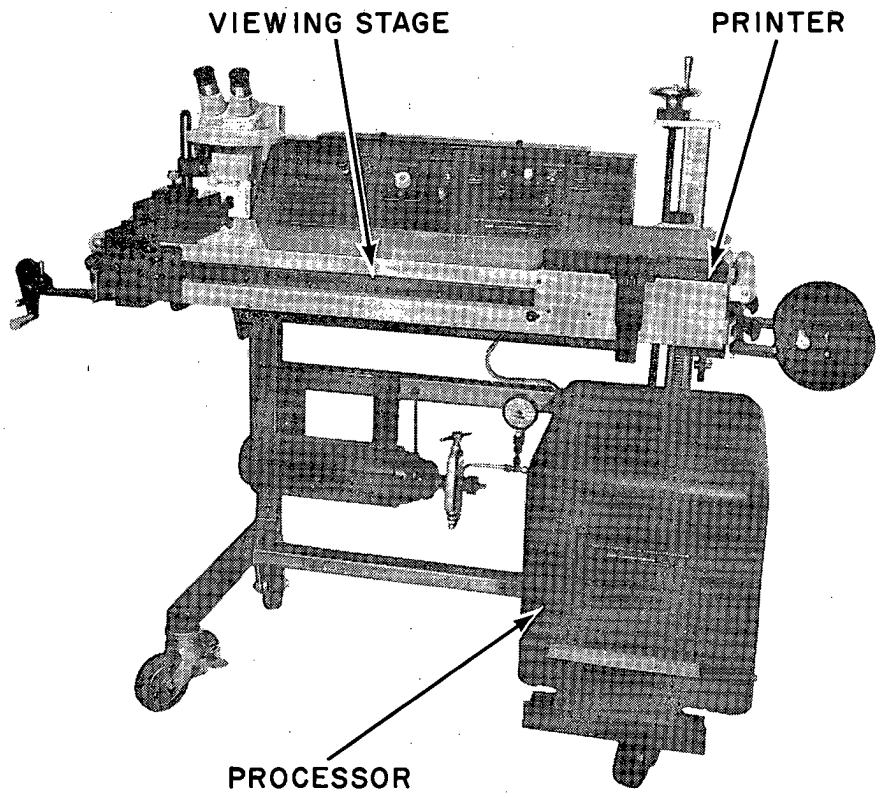

Figure 1.1 MAJOR COMPONENTS OF THE RAPID INTERPRETATION PRINTER-PROCESSOR

SECTION 2

PREVENTIVE MAINTENANCE

While the Rapid Interpretation Printer-Processor is a rugged and relatively simple piece of equipment, it should be given the care characteristically given to all precision opto-mechanical equipment. Such attention, together with the implementation of the following preventive maintenance procedures, should assure safe and continuous machine operation and the production of quality film copies.

2.1 DUST ACCUMULATION

Care should be exercised to prevent the accumulation of dust or foreign matter on the exposure platen, the entrance shute of the Processor and the Processor drawer. Glass surfaces should be cleaned periodically with a dry brush or a window cleaning solvent such as Windex applied with lens tissue. The entrance shute should be cleaned periodically with a vacuum cleaner equipped with a tapered nozzle.

2.2 1000 HOUR CHECK AND LUBRICATION

After approximately 1000 hours of processor operation, the Processor should be disassembled (in accordance with instructions, Section 4) to the degree necessary to obtain access to both drive chains and the processor motor. The following procedures should then be implemented:

A. Check Processor motor gearbox and lubricate gearbox and motor bearings with Molycote Type L lubricant.

B. During reassembly, drive chains should be lubricated with a low temperature silicone grease (Dow Corning 33 Grease or equivalent).

C. Chains should be reinstalled so that they are taut. This is accomplished by movement of the idler sprockets.

SECTION 3

ELECTRICAL SYSTEM

3.1 HIGH VOLTAGE PRECAUTION

Both viewing and exposure lights in the RIPP operate at high voltages. Consequently, neither the Control Panel nor the housing for the lights should be opened unless the power cord is unplugged and extreme care is exercised.

3.2 LAMPS AND LAMP LIFE

Location	Description	Anticipated Life
Light Table	Primary Light Source	10,000 hours
Printer	Exposure Lamp	2,000 Exposures
Printer	Preview Lamps	6-10,000 hours
Control Panel	Indicator Lamps	6-10,000 hours

3.3 FUSES

All fuses utilized in the RIPP are of the indicating type, i.e., they will illuminate at failure. All operating fuses are located on the Control Panel. Access to each fuse is gained by unscrewing the fuse cap from the front of the console. A rack of spare fuses may be found under the right hand end of the light table.

3.4 REPLACEMENT OF CONTROL PANEL INDICATOR LAMPS

To replace Control Panel indicator lamps, unscrew caps and twist out. Replace with General Electric NE 51/H bulbs.

3.5 ACCESS TO CONTROL PANEL INTERIOR

To gain access to the circuitry located behind the control panel, pad light table with thick foam rubber, several layers of heavy cloth, or thick packing material. Remove screws on perimeter of control panel, lift forward and out and place face down on top of the padded table (Figure 3.1).

3.6 METER RESET

Both the exposure counter and the Processor elapsed time meter may be reset by hand. Access to the reset controls is gained from the back of the Control Panel.

3.7 ELECTRICAL SCHEMATIC

The RIPP Electrical Schematic is illustrated in Figure 3.2.

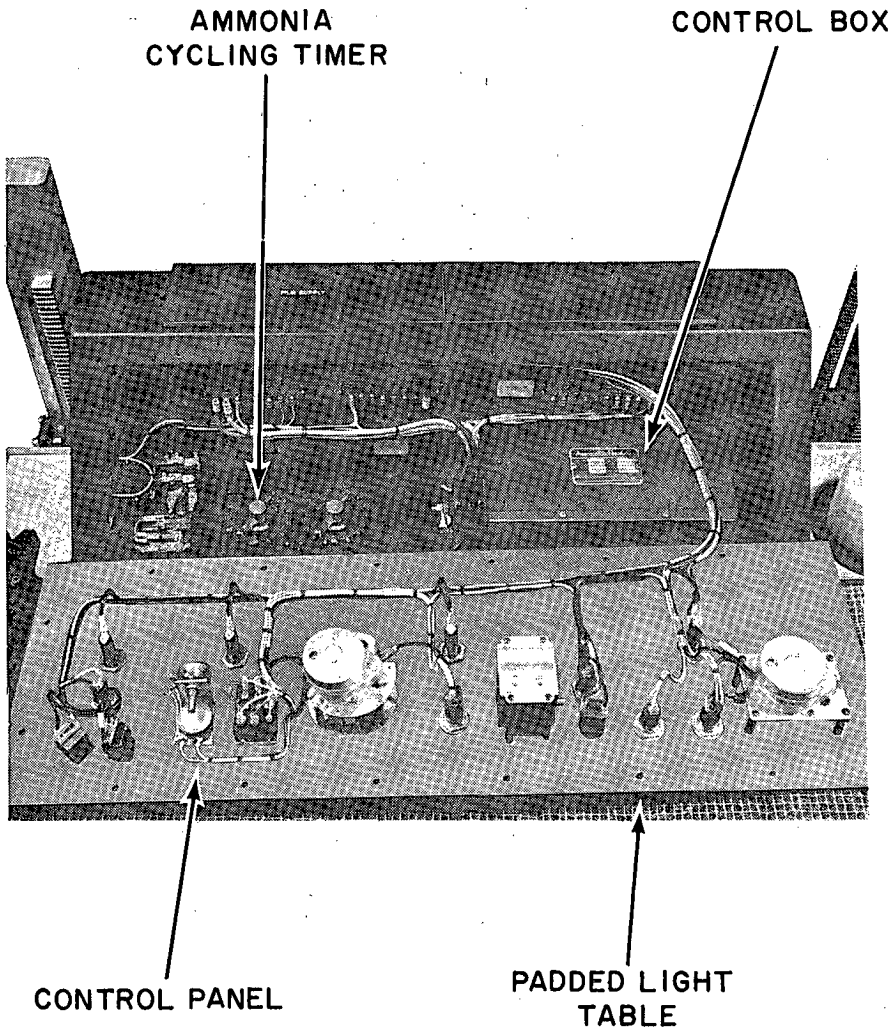

Figure 3.1 CONTROL PANEL INTERIOR

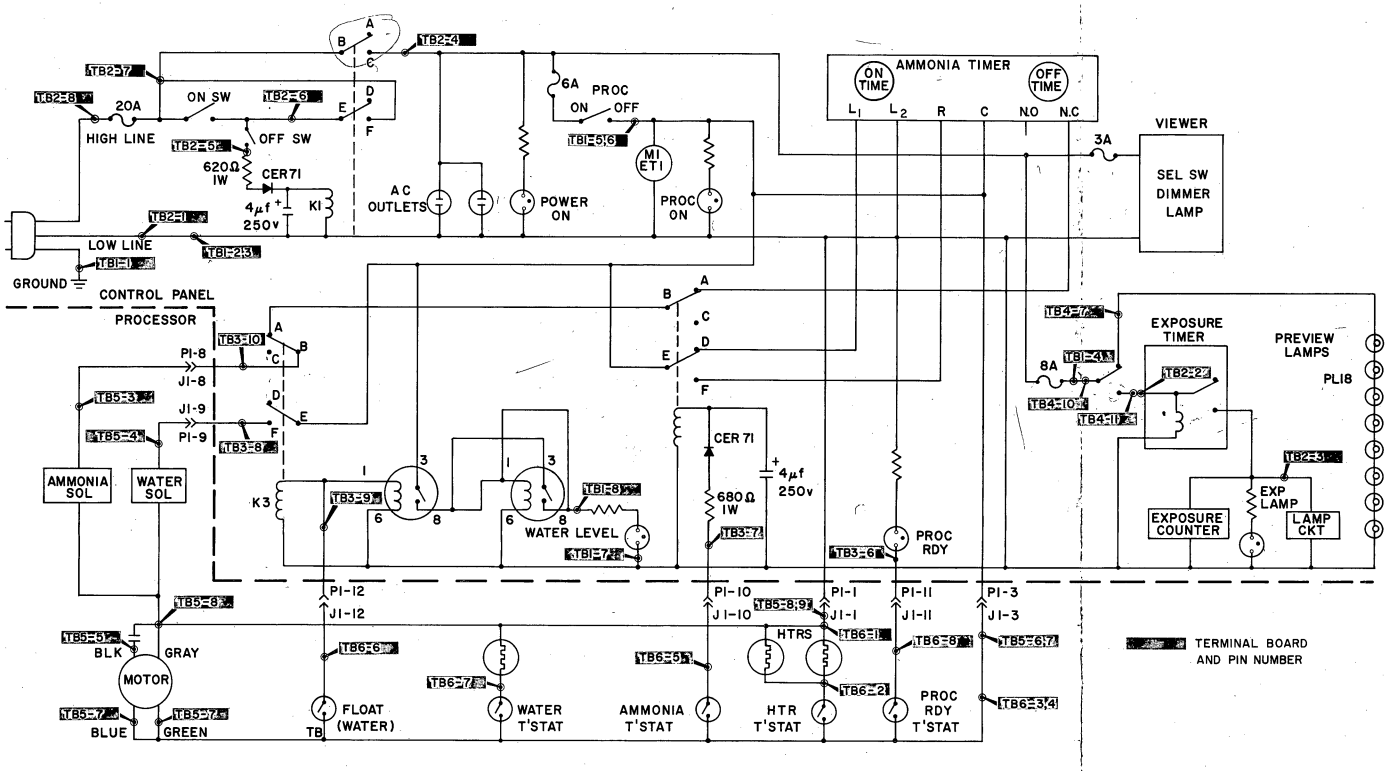

Figure 3.2 ELECTRICAL SCHEMATIC

SECTION 4

DISASSEMBLY AND MAINTENANCE PROCEDURES

4.1 LIGHT TABLE

4.1.1 GENERAL

The light table of the RIPP is a modified Richard's GFL 940 MCE Light Table and its construction is essentially the same as the unmodified version. If other than the lamp or glass viewing surface replacement is required, the Richard's Maintenance Manual should be consulted.

4.1.2 DISASSEMBLY

Slide stereoscope mount to extreme left position. Remove screw from film roller at left end of table and remove roller. Remove two screws holding film roller bracket and remove bracket. Glass viewing surface may now be slid to the left out of position. To remove lamp, disconnect electrical leads 2 and 3 from TB #4. Remove 4 screws in corners of lamp plate and lift out of position.

4.2 PRINTER

4.2.1 PRINTING PRESSURE ADJUSTMENT

The production of prints with non-uniform resolution throughout the format may be the result of non-uniform pressure being applied at the Printer platen. This may be tested by running resolution tests in the four quadrants of the platen. If pressure adjustment appears necessary, two mechanisms are available. These adjustments, which should be made with the pressure platen unlocked, permit changes in pressure to be made at both the

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front and rear of the printer. The first adjustment is made by screwing or unscrewing the latch catch. This varies the pressure primarily in the front half of the pressure platen.

The second adjustment is provided by two hex socket cap screws at the back of the palten cover. These screws may be loosened to allow raising or lowering the cover on its hinges which, in turn, varies the pressure primarily on the rear half of the pressure platen.

These adjustments permit the application of equal pressure throughout the format area. Correct pressure will result in uniform resolution measurements throughout the format.

4.2.2 PRINTER DISASSEMBLY

To disassemble printer to replace glass, exposure lamp or preview lamps, remove film roller and film roller bracket from right end of table. Remove the 10 hex head screws holding frame to table and lift out frame and glass. The glass printing surface (Vicor glass) may now be removed by disassembling the frame.

To replace exposure lamp, remove the white mounting clamps and electrical leads #5, 6,7,8, and 9 from TB #4. Lamp may now be lifted out of position.

Access to the Preview Lamps is gained once the glass printing surface and exposure lamp are removed. The Preview Lamps are T3 1/2/18V, #1445 lamps wired in series.

4.3 PROCESSOR

The Processor consists of three subsystems and their related electrical components. They are the water supply, ammonia supply and the film

transport subsystems respectively.

4.3.1 WATER SUPPLY SUBSYSTEM

The water supply subsystem is schematically illustrated in Figure 4.1. Externally visible components of the subsystem are photographically illustrated in Figures 4.2, 4.3, 4.4, and 4.5 and consist of the following:

A. Main Water Reservoir (Figure 4.2) - Plastic water bottle, refillable from top.

B. Water ON-OFF Solenoid Valve (Figure 4.5) - Feeds water supply from main reservoir to secondary reservoir located within processor. Solenoid is actuated by float valve located in secondary reservoir.

C. Secondary Water Reservoir (Figure 4.4) - Located within processor "tunnel". Contains float valve and heating element.

D. Plastic Water Tubing and Unions (Figure 4.3) - Feeds water from primary reservoir to solenoid and hence to secondary reservoir.

4.3.1.1 Activation of Water Supply Subsystem. An automatic ammonia shut down will occur should water level in the Processor fall below a preset level. Consequently, the Processor will not function properly without first activating the water supply subsystem. To activate water supply subsystem, remove cap of primary reservoir and fill with water until water level is approximately level with the top of the table. It is recommended that distilled water be used in the system.

4.3.1.2 Draining of Water Supply Subsystem. Should shipment or major movement of the RIPP table be contemplated, the water supply subsystem must be drained. Both the primary and the secondary reservoirs must be emptied. Total capacity is approximately 1 1/2 quarts.

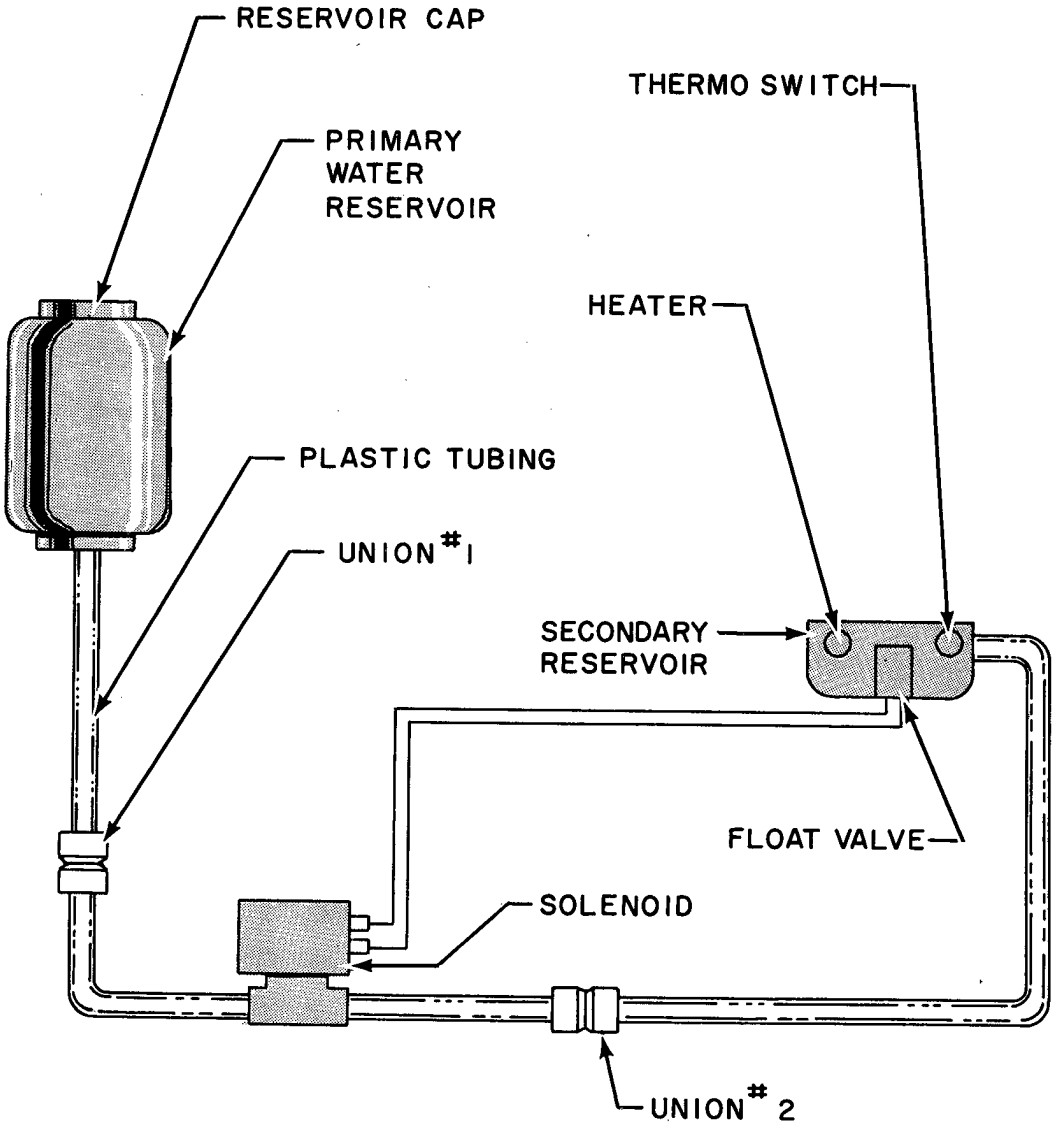

Figure 4.1 SCHEMATIC of WATER SUPPLY SUBSYSTEM

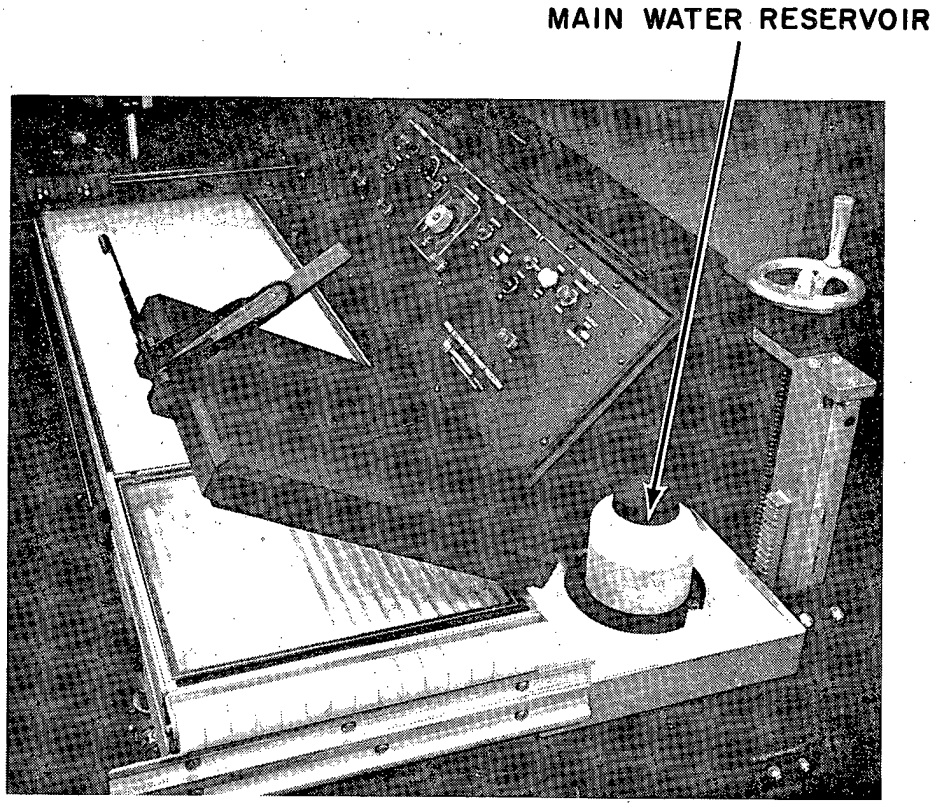

Figure 4.2 MAIN WATER RESERVOIR

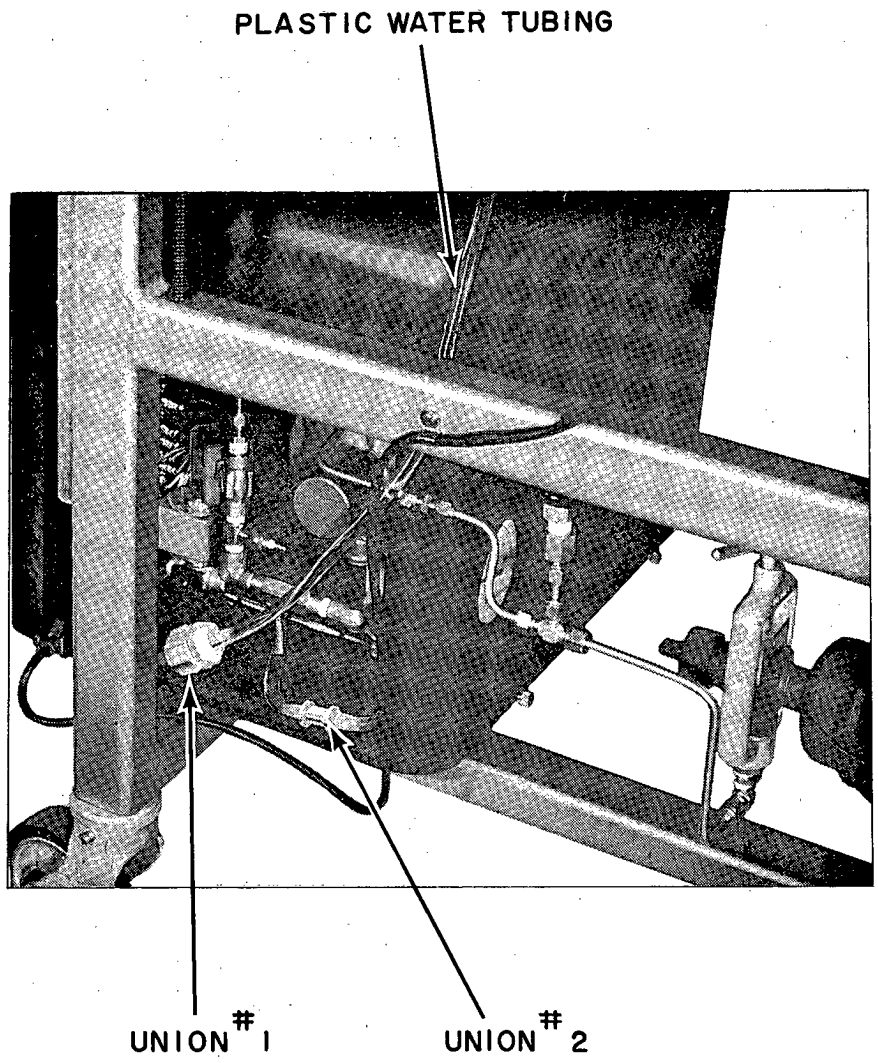

Figure 4.3 REAR VIEW OF PROCESSOR SHOWING LOCATION OF SOME WATER SUPPLY SUBSYSTEM COMPONENTS

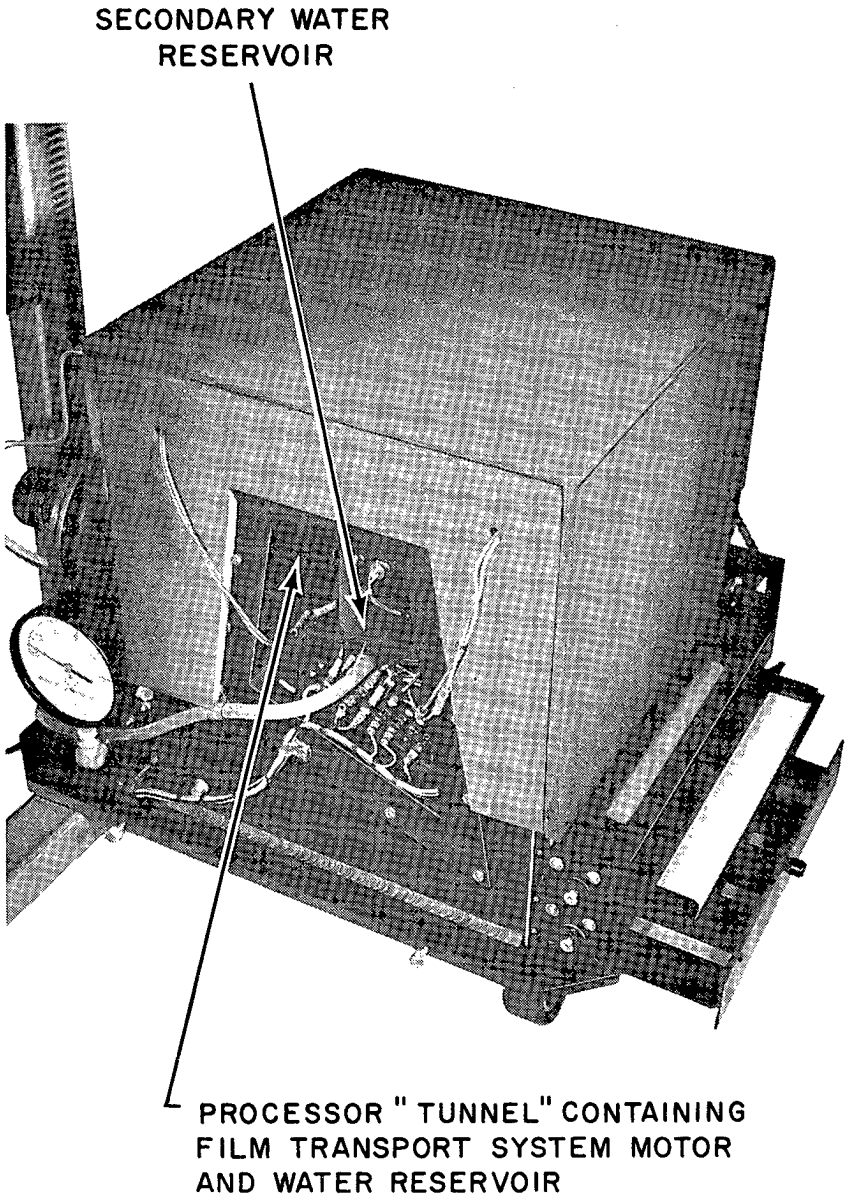

Figure 4.4 SIDE VIEW OF PROCESSOR, SHROUD REMOVED

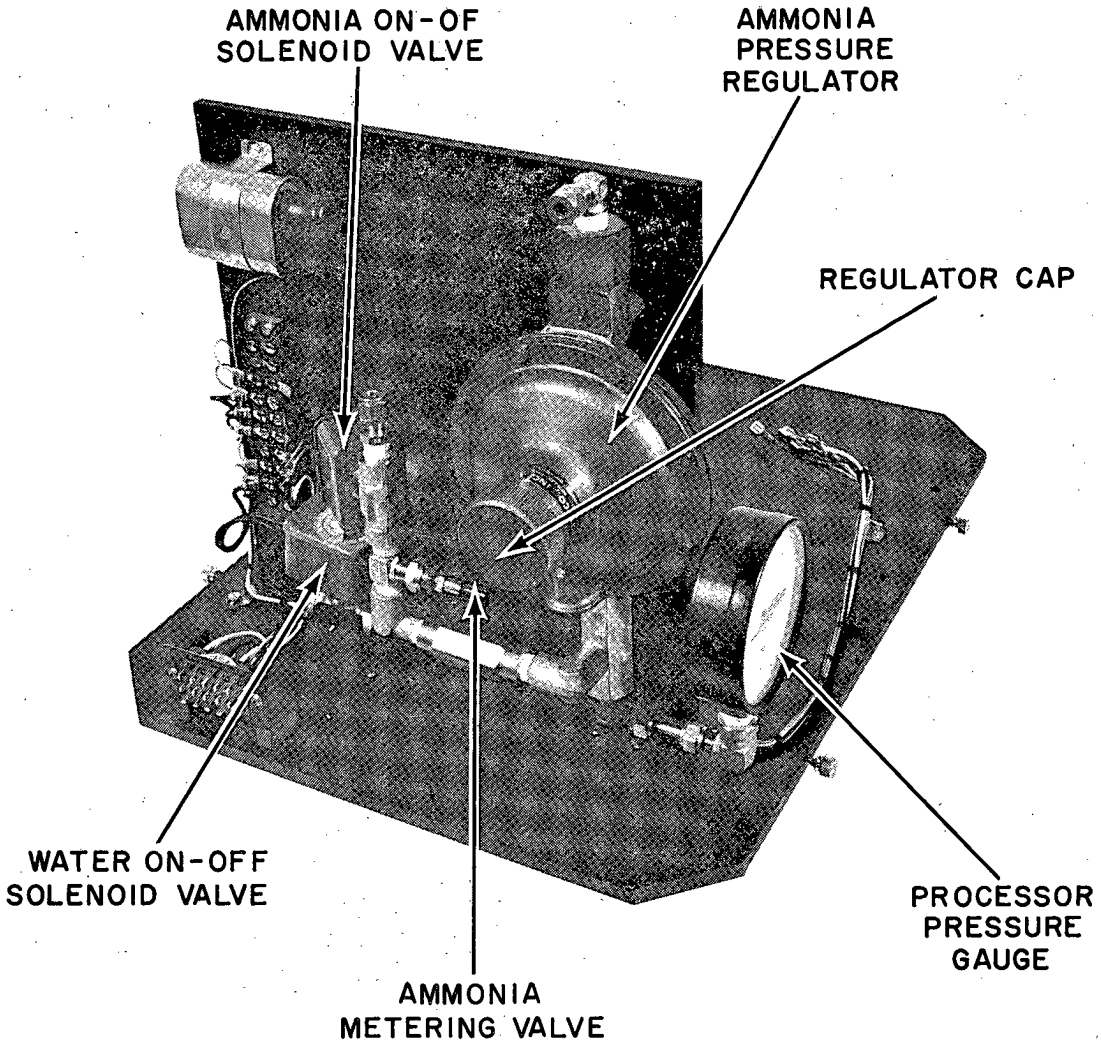

Figure 4.5 PROCESSOR SHELF (PROCESSOR AND COVER REMOVED) SHOWING AMMONIA AND WATER DISTRIBUTION SUBSYSTEM

A. To drain Primary Reservoir, disconnect union #1 (Figure 4.3) and drain into waterproof container.

B. To drain Secondary Reservoir, disconnect union #2 (Figure 4.3) and drain into waterproof container.

4.3.1.3 Failure of Water Level Low Indicator. Should the water-level-low indicating lamp fail to flash although water level in primary reservoir is evidently empty, the flasher and the relay within the water system circuitry should be checked for proper functioning prior to any further disassembly.

4.3.2 AMMONIA SUPPLY SUBSYSTEM

The ammonia supply subsystem is schematically illustrated in Figure 4.6. The components are photographically illustrated in Figures 4.7 and 4.5 and consist of the following:

A. Ammonia Tank - Standard reusable tank.

B. Ammonia Shut-Off Valve - Standard valve mounted on ammonia tanks. (A valve wrench is attached to the assembly.)

C. Ammonia Tank Pressure Gage - Indicates tank pressure. This reading should be approximately 120 psig with a full tank depending on ambient temperature.

D. Ammonia Presssure Regulator - Reduces ammonia pressure to a steady 1 - 1 1/2 psig.

E. Processor Pressure Gage - Indicates ammonia pressure supplied by the pressure regulator, above. This reading should be between 1 and 1 1/2 psig.

F. Ammonia Metering Valve - Rate of flow regulator.

G. Ammonia ON-OFF Solenoid Valve - Automatically turns ammonia ON or OFF depending on needs of the Processor.

During Processor operation, ammonia is metered from the tank through the pressure regulator at a steady 1 - 1 1/2 psig, through a metering valve, and into the processing chamber. Ammonia flows only as required and is regulated by a solenoid valve actuated by a cycling timer located behind the control panel.

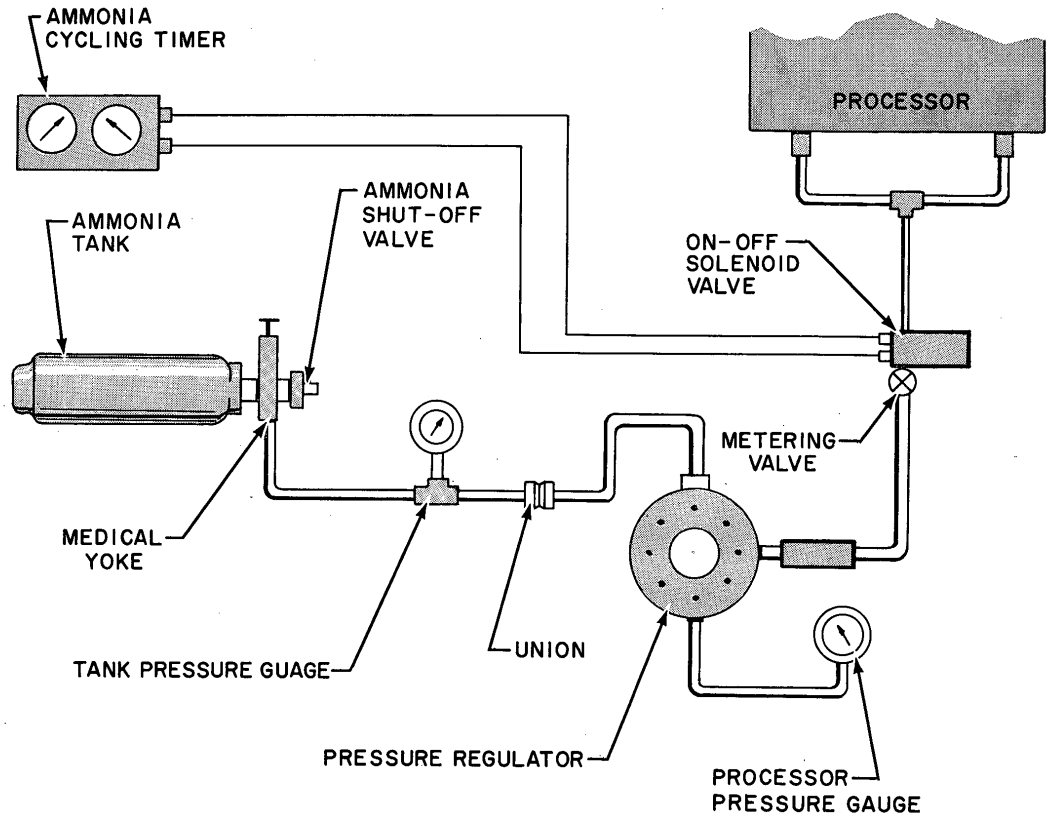

Figure 4.6 SCHEMATIC of AMMONIA SUPPLY SUBSYSTEM

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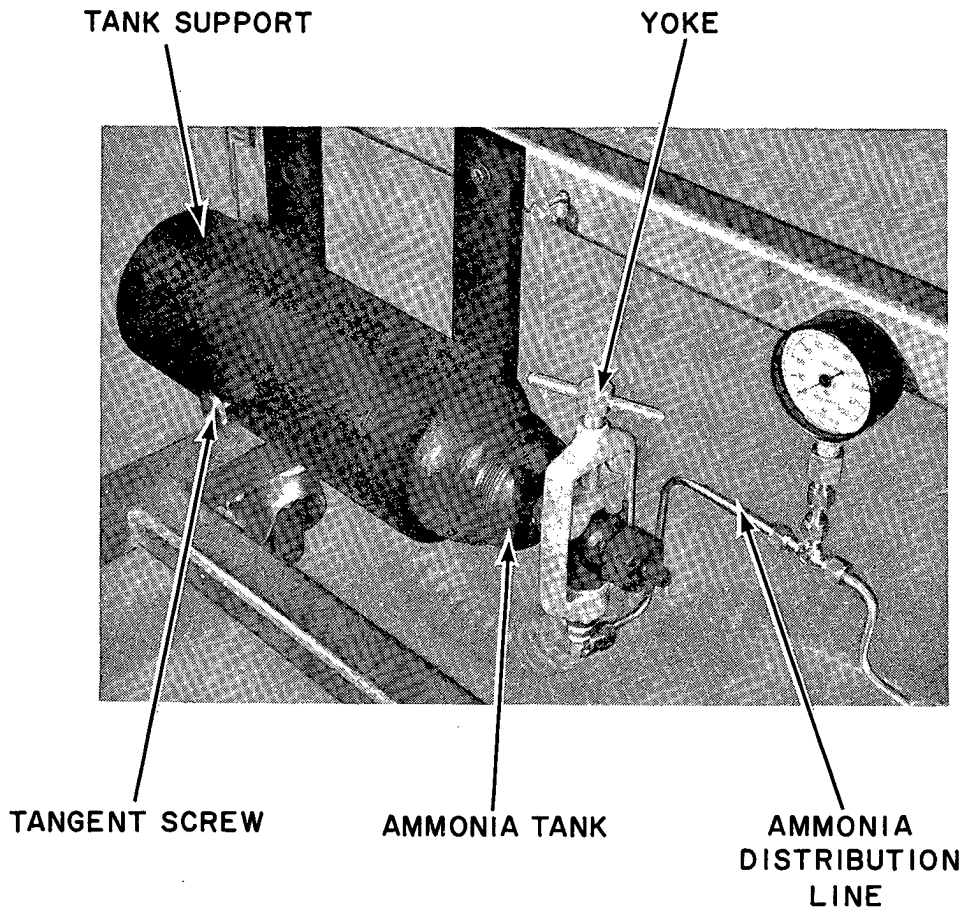

Figure 4.7 AMMONIA TANK AND RELATED SUPPORT ASSEMBLY

4.3.2.1 Initial Activation of Ammonia Supply Subsystems. To activate the ammonia supply subsystem requires the following sequence of events:

1. Slide ammonia tank through tank support and into Yoke with tank exit port facing downward. Lower part of Yoke should have rubber gasket seated in position. Tighten Yoke snugly by hand making certain that proper fit is obtained. With Yoke tightened, tighten tangent screw on tank support to secure assembly.

2. Open tank shut off valve with wrench attached to table. With a full tank, Tank Pressure Gauge should read approximately 120 psig.

3. Turn Main Power and Processor ON after determining that power cord is plugged into 110V/60 cycle, 20 amp power receptacle.

4. Check that Processor Pressure Gauge reads 1 to 1 1/2 psig. If not, unscrew green cap at rear of Processor to gain access to Processor Pressure Regulator and adjust to proper pressure with hex wrench. Any adjustments should be made cautiously. Clockwise valve rotation will increase pressure while counterclockwise rotation will decrease pressure. Replace regulator cap. Subsequent tank replacements should require little or no adjustment of this regulator.

4.3.2.2 Ammonia Tank Replacement. The depletion of the ammonia supply will be evidenced by a sharp and rapid decline of ammonia tank pressure from its normal pressure of approximately 120 psig. To remove depleted tank, close tank valve with wrench provided, unscrew Yoke Lock and tank support tangent screw, and slide tank through tank support into yoke with tank exit port facing downward. Lower part of Yoke should have rubber gasket seated in position. Tighten yoke snugly by hand making certain that proper fit is obtained. With yoke tightened, tighten tangent screw on tank support to secure assembly. Open tank shut-off valve with wrench provided. With a full tank, Tank Pressure Gage should read approximately 120 psig. Turn Processor ON, and check that Processor Pressure Gauge reads 1 - 1 1/2 psig. Processing may now continue. If controls

are properly adjusted, a full tank should last approximately 600 processing hours.

4.3.2.3 Bleeding of Ammonia Line. Should disassembly of ammonia supply system be required, ammonia line must be bled. This is necessary since part of the ammonia distribution line contains ammonia at approximately 120 psig. If allowed to escape uncontrolled into an average sized room, the room will rapidly fill with irritating ammonia fumes. To bleed the ammonia line requires the following sequence of events:

1. Remove power cord from wall outlet.
2. Shut off ammonia tank with wrench provided.
3. Disconnect ammonia line above ammonia ON-OFF solenoid and attach 2-3 feet of 3/8" (I.D.) plastic tubing.
4. Place open end of plastic tubing into water pail containing 2-3 gallons of water. (A closed line should now run between the ammonia solenoid and the water.)
5. Energizing the ammonia solenoid by applying 110V AC to terminals 3 and 8 (TB #5 adjacent to solenoid). Allow ammonia to bubble into the water until tank pressure gauge reads zero.
6. Discard ammoniated water, remove rubber tubing and reconnect ammonia line.

4.3.2.4 Ammonia Cycling Timer. The opening and closing of the ammonia solenoid is controlled by a cycling timer located within the control panel. This timer has been preset at the factory to provide the necessary amount of ammonia to the Processor in the processing of the recommended Diazo printing material and consequently, should not need adjustment under normal operating conditions.

Future advancements in techniques or diazo materials, however, may necessitate the changing of the ON - OFF cycling to a new combination. Con-

sequently, the timer has been positioned so that it is accessible without removing the control panel.

The timer is held in place by 6 screws accessible from under the control box. To remove timer, hold in place with one hand and remove screws with the other. With all screws removed, lower timer onto tank support or to low bench or stool placed under the table. If only tank support is available, timer may be taped in place.

4.3.3 FILM TRANSPORT SUBSYSTEM

The film path through the Processor and other internal components are illustrated in Figure 4.8. The film transport and guide belts, and the film transport chain are photographically illustrated in Figure 4.9. The drive chain and motor gear box are illustrated in Figure 4.10. The motor is mounted within the Processor "tunnel" (Figure 4.4).

4.3.3.1 Gear Box and Chain Lubrication. Lubrication of the motor gear box and the two chains should be accomplished after each 1000 hours of Processor operation in accordance with Section 2 of this manual, "Preventive Maintenance".

4.3.3.2 Processor Chain Tightening. To tighten (or loosen) outer drive chain, adjust the upper chain sprocket of the three sprockets located at the forward or film shute face of the Processor (Figure 4.10). To tighten (or loosen) the inner film transport chain, adjust the idler sprocket indicated in Figure 4.9.

4.3.4 PROCESSOR DISASSEMBLY

CAUTION: UNPLUG UNIT PRIOR TO DISASSEMBLY.

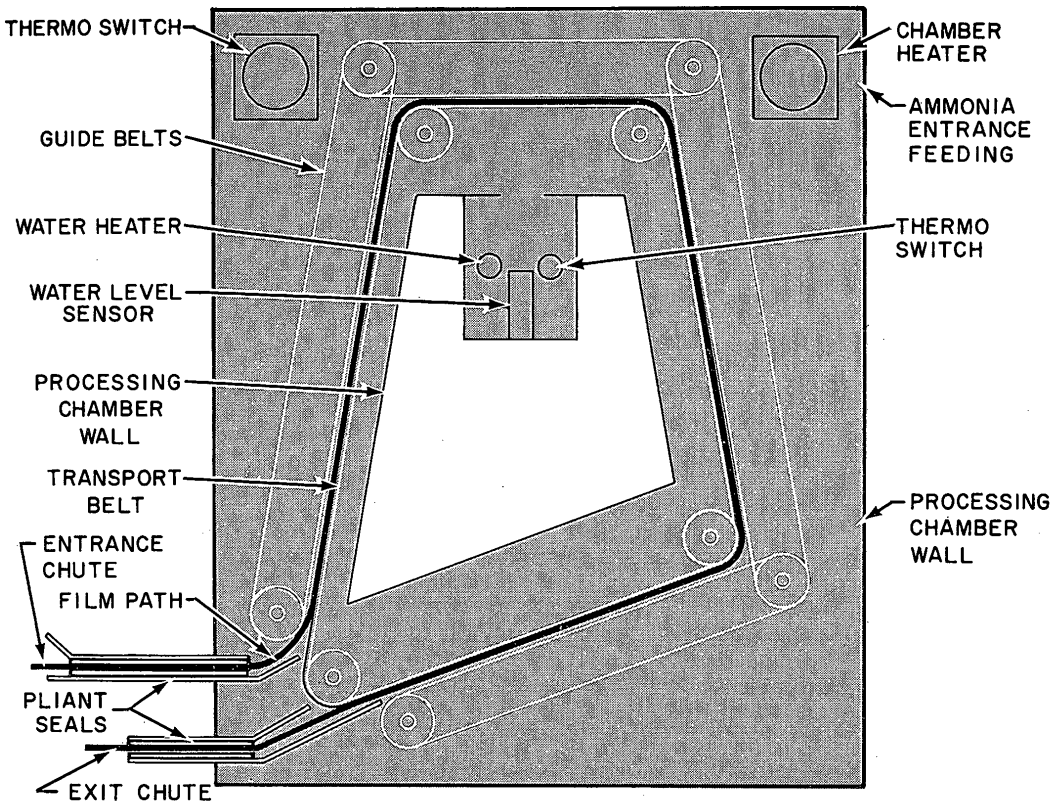

Figure 4.8 FILM PATH

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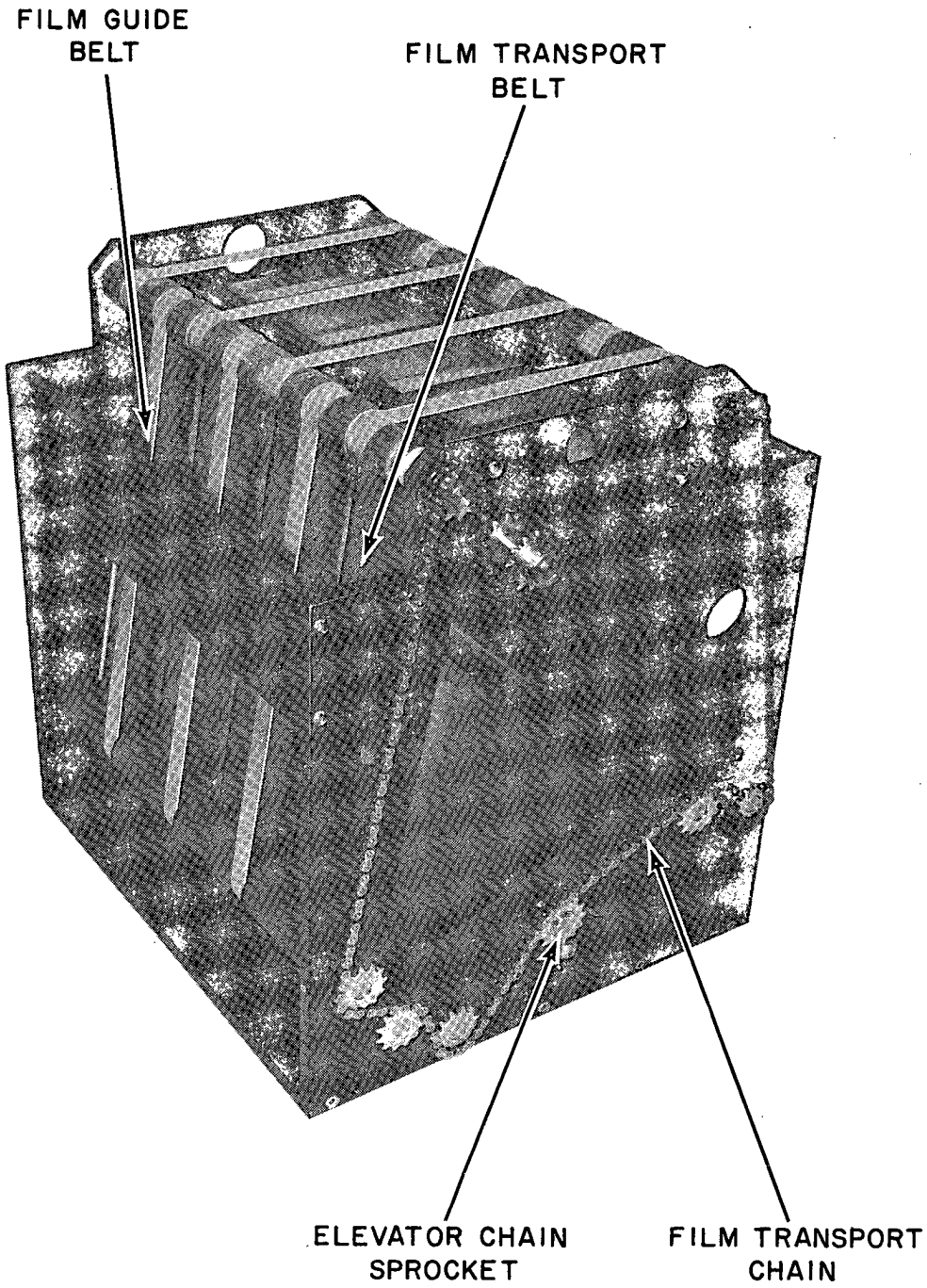

Figure 4.9 FILM TRANSPORT COMPONENTS

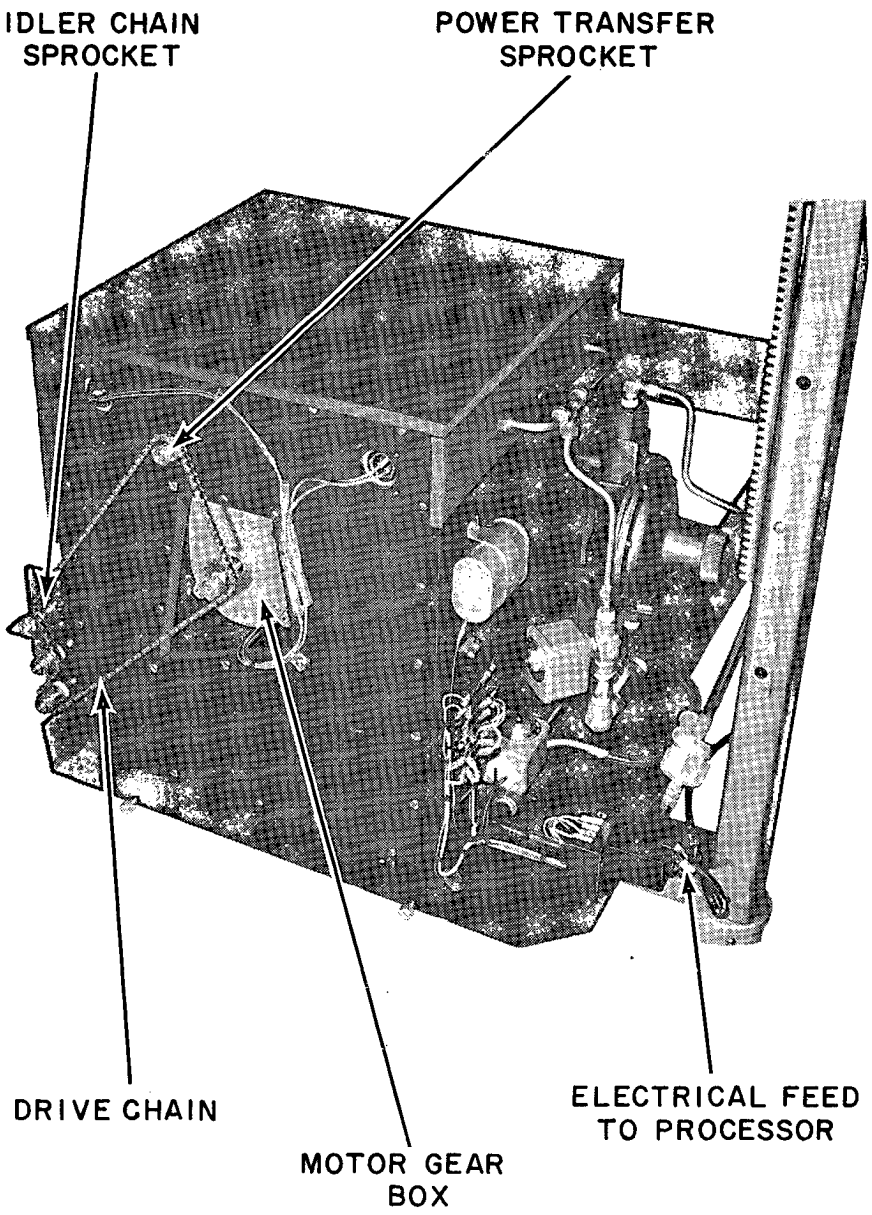

Figure 4.10 RIGHT END VIEW OF PROCESSOR, SHROUD REMOVED

4.3.4.1 Shroud Removal. To remove shroud, elevate table to full height, unscrew the two thumbscrews located each side of the Processor and lift shroud off vertically.

4.3.4.2 Processor Separation. If it is desirable to separate the Processor from the table to facilitate remote processing or testing, proceed as follows:

1. Shut ammonia tank off and bleed ammonia supply system.
2. Drain water supply system.
3. Disconnect ammonia supply system immediately to the right of tank pressure gauge at the union.
4. Disconnect primary water reservoir at union #1 (Figure 4.3).
5. Unplug electrical feed at rear of Processor (Figure 4.10).
6. Remove 3 bolts from under the Processor that fasten Processor to table.
7. Slide Processor forward and off.
8. Re-establish water supply system.
9. Re-establish ammonia supply system. CAUTION: Any additions to the system (tubing, connectors, or joints) must be capable of withstanding up to 150 psig pressure.
10. Re-establish electrical connection.

4.3.4.3 Removal of Processing Chamber and Film Transport Assembly. To remove the film transport and processing chamber assembly from the Processor shelf, requires the following sequence of events:

1. Shut off ammonia tank.
2. Remove Processor shroud.
3. Disconnect electrical wires (input side) from TB #6.
4. Drain water supply subsystem and disconnect at union 2 (Figure 4.3).

5. Back off the two ammonia line connectors immediately behind Processor.

6. Remove 6 screws from underneath Processor shelf and slide assembly forward and off.

4.3.4.4 Removal of Film Shute. To remove film shute assembly, unloosen idler chain sprocket (Figure 4.10) and remove drive chain. Remove 16 screws from front of shute and pull shute forward and off.

4.3.4.5 Removal of Film Transport Assembly. To separate the film transport assembly from the balance of the Processor, requires the following sequence of events:

1. Remove drive chain and film shute.

2. Support shaft of power transfer sprocket (Figure 4.10) from underneath and remove pin with 3/32" drift punch.

3. Slide power transfer sprocket from shaft.

4. Disconnect wiring at slip joint spade lugs and cable clamps on right side of assembly.

5. Remove screws (29) from plate at right side of assembly and remove plate.

6. Remove 4 screws from underneath the assembly. (Two 1/4-20 cup screws secure the front and two 1/4-20 button-head screws secure the rear. These must be assembled in the same order to obtain the required movement of the film drawer.)

7. Slide film transport assembly off "tunnel".

4.3.4.6 Disassembly of "Tunnel". To gain access to film drive motor and secondary water reservoir, disconnect necessary cable clamps and wiring from terminal board TB #6 within "tunnel" at left end, remove center core screws from right end, and center core screws from left end. Slide core out.

SECTION 5

PREPARATION FOR SHIPMENT

The following steps should be performed prior to shipment of the Rapid Interpretation Printer-Processor.

a. Lock Microscope Slide in both X and Y by tightening thumbscrews.

b. Remove film spool support brackets.

c. Drain water from Primary and Secondary Reservoirs.

d. Close ammonia tank Shut-OFF valve and metering valve. Remove ammonia tank by loosening Yoke Lock. Rubber seal between tank and Yoke should be replaced when tank is reinstalled. Ammonia tank should be transported separately from the unit.

e. Lower table until it rests on stops.

f. Tape Printer Platen in the down position using packing tape or masking tape. Catch should be locked during shipment.

g. Tape Power Cord to frame of elevating mechanism.

h. Place Rapid Interpretation Printer-Processor in Light Table shipping crate.

i. Pack Film Spool Support Brackets in separate cardboard box and secure it in Light Table shipping crate.

j. Ammonia Tank should not be included in the crate.

SECTION 6

PARTS LIST

6.1 CONTROL PANEL

Part	Part No.
Front Panel	543707
Chassis, Control	543708
Bracket, Relay	543743
Bracket, Transformer	543732
Timer, Recycling	543777
Switch, Main	543778
Switch, Viewing Table	543779
Switch, Processor	543780
Connector	543781
Indicator, Elapsed Time	543785
Timer, Exposure	543786
Recepticle, Service	543793
Counter, Exposure	543797
Switch, Dimmer Control	544504

6.2 LIGHT TABLE

Pressure Platen Assembly	543711
Cover	543712
Pad, Cover Assembly	543713
Bracket, Lower Hinge	543714
Stop, Cover	543715
Bracket, Upper Hinge	543716

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Part	Part No.
Shaft Hinge	543717
Bracket, Switch	543718
Stop, Switch	543719
Clamp, Glass	543720
Support, Latch	543721
Holder, Glass	543722
Spreader	543723
Glass, Platen	543724
Outline P.L.	543725
Outline B.P.	543726
Spacer	543727
Spacer, Light Table	543728
Bracket, Lower Hinge	543714
Latch, Extender	543729
Stop Button Latch	543730
Plate, Stop	543735
Cover, Ter. Strip	543736
Decal	543737
Stop Button Interlock	543731
Angle, Shelf Light Table	543733
Clamp, Water Bottle	543774
Cover, Terminal Strip	543736
Spacer	543740
Platen Latch Assembly	543787

6.3 PROCESSOR

Part	Part No.
Film Transport Assembly	543776
Frame, Processor	543700
Roller, Belt	543751
Adapter, Bearing	543701
Adapter, Bearing	543706
Roller, Drive	543709
Roller, Slip	543750
Washer, Thrust	543702
Chamber, Processor	543705
Adapter, Thermoswitch	543746
Adapter, Heater	543747
Radiator, Heater	543745
Heater, Chamber	543799
Heater, Water	544501
Reservoir, Processor	543734
Switch, Chamber Heat	544502
Switch, Water Heat	544503
Switch, Level	543784
Motor, Drive	788
Chain, Drive	794
Coupler, Chain	796
Seal, Drive Shaft	795
Switch Ready Process	544504
Idler Assembly Roller, Film Drive	543752

Part	Part No.
Chute Assembly	544500
Chute, Upper	543753
Mount, Idler	543766
Roller, Chute	543775
Adapter, Bearing	543765
Chute, Lower	543754
Strip, Filler	543771
Frame, Chute	543755
Bar, Seal	543769
Spreader, Film Feed	543763
Support, Bearing	543764
Pin, Idler	543767
Collar	543739
Clutch, Film Drive	543798
Runner, Film Tray	543770
Tray, Film	543772
Mounting Plate, Regulator	543759
Base Plate	543757
Holder, Bottle	543758
Block Solenoid Mtg.	543762
Mounting Block	543761
Mount, Connector	543760
Shroud	543773

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6.4 AMMONIA SYSTEM

Part	Part No.
Anhydrous Ammonia Bottle	543783
Gasket, Yoke	543782
Regulator Assembly	543789
Solenoid Ammonia Control	543791
Solenoid Water Control	543790
Gauge 0-300 PSI	543792